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Monsanto Co., Dayton, OH

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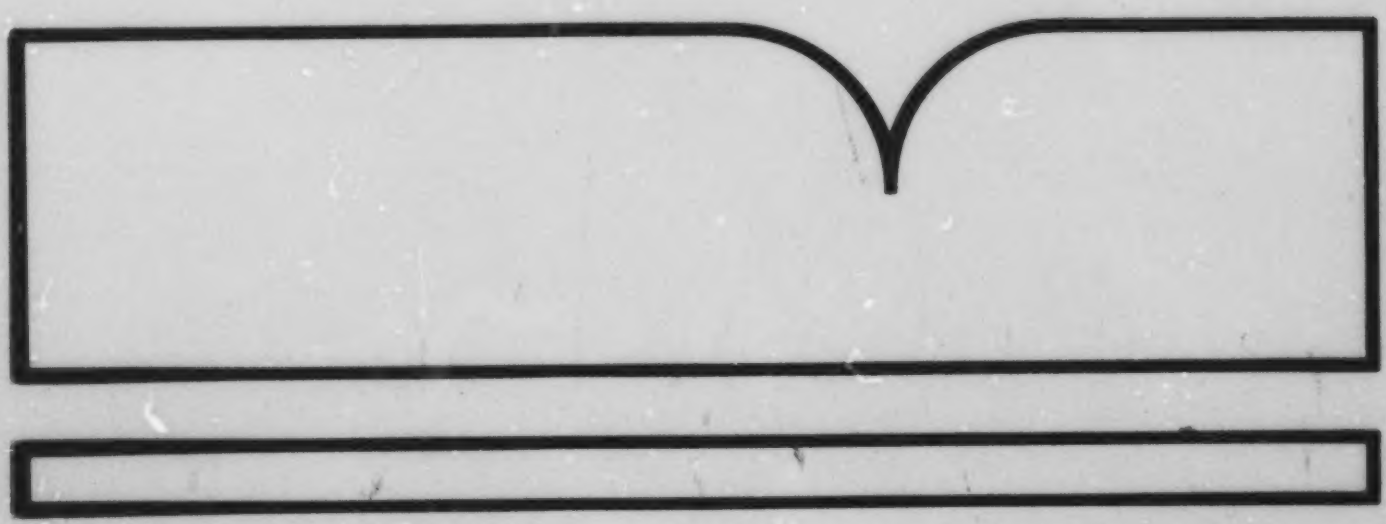

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The experimental design and results of a validations study for an analytical method to detect 29 halocarbons in water are described herein. In Method 601, the halocarbons are purged by an inert gas which is bubbled through the aqueous sample. The vapors are then trapped in a short column containing a suitable sorbent. The trapped components are then thermally desorbed onto the head of a chromatographic column and measured by means of halide specific detector. In this study, the 29 halocarbon compounds were divided into three separate mixes to minimize interferences from co-eluting peaks. The spiking solutions employed in the study contained the 29 halocarbons at six concentrations. Six water matrices were used in the study: distilled water, drinking water, and a surface water all supplied by the cooperating laboratories; and three industrial wastewaters supplied by the Monsanto Company. Statistical analyses and conclusions in this report are based on analytical data obtained by 20 collaborating laboratories.

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EPA METHOD STUDY 24, METHOD 601—PURGEABLE HALOCARBONS BY THE PURGE TRAP METHOD

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FOREWORD

Environmental measurements are required to determine the quality of ambient waters and the character of waste effluents. The Environmental Monitoring and Support Laboratory (EMSL)-Cincinnati's research responsibilities are to:

- Develop and evaluate techniques to measure the presence and concentration of physical, chemical, and radiological pollutants in water, wastewater, bottom sediments, and solid waste.

- Investigate methods for the concentration, recovery, and identification of viruses, bacteria, and other microorganisms in water.

- Conduct studies to determine the responses of aquatic organisms to water quality.

- Conduct an Agency-wide quality assurance program to assure standardization and quality control of systems for monitoring water and wastewater.

This publication reports the results of EPA's interlaboratory study for analysis of 28 priority pollutants by the method 601 purge and trap technique.

Federal agencies, states, municipalities, universities, private laboratories, and industry should find this evaluative study of assistance in monitoring and controlling pollution in the environment.

Robert L. Booth, Acting Director
Environmental Monitoring & Support Laboratory

ABSTRACT

An interlaboratory method study to detect 28 halocarbons in water is described herein. In Method 601, the halocarbons are purged by an inert gas which is bubbled through the aqueous sample. The vapors are trapped in a short column containing a suitable sorbent. The trapped components are then thermally desorbed onto the head of a chromatographic column and measured by means of a halide-specific detector. In this study the 28 halocarbon compounds were divided into three separate mixes to minimize interferences from co-eluting peaks. The spiking solutions employed in the study contained the 29 halocarbons at six concentrations. Six water matrices were used in the study: a distilled, drinking, and surface water supplied by the cooperating laboratories; and three industrial wastewaters supplied by Monsanto Company. Statistical analyses and conclusions in this report are based on analytical data obtained by 20 collaborating laboratories.

Participating laboratories were selected based upon technical evaluation of proposals and upon the analytical results of pre-study samples. Data obtained from the interlaboratory study were analyzed employing EPA's computer programs known as the Interlaboratory Method Validation Study (IMVS) system, which are designed to implement the concepts recommended in ASTM Standard D 2777. The statistical analyses included rejection of outliers, estimation of mean recovery (accuracy), estimation of single-analyst and overall precisions, and tests for the effects of water type on accuracy and precision.

This report was submitted in fulfillment of contract 68-03-2856 by Monsanto Company under the sponsorship of the U.S. Environmental Protection Agency and covers a period from September 1979 to December 1982.

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SECTION 1

INTRODUCTION

The analytical laboratories of the U.S. Environmental Protection Agency (EPA) gather water quality data to provide information on water resources, to assist research activities, and to evaluate pollution abatement activities. The success of these pollution control activities, particularly when legal action is involved, depends upon the reliability of the data provided by the laboratories.

Under provisions of the Clean Water Act, the EPA is required to promulgate guidelines establishing test procedures for the analysis of pollutants. The Clean Water Act Amendments of 1977 emphasize the control of toxic pollutants and declare the 65 "priority" pollutants and classes of pollutants to be toxic under Section 307(a) of the Act. This report is one of a series that investigates the analytical behavior of selected priority pollutants.

The EMSL-Cincinnati of the EPA develops analytical methods and conducts a quality assurance program for the water laboratories which is designed to increase the reliability and legal defensibility of water quality information collection by EPA laboratories. The responsibility for quality assurance (QA) is assigned to the Quality Assurance Branch (QAB). One of the QA activities is to conduct interlaboratory tests of the methods. This study reports the results of the interlaboratory study on Method 601 (Study 24).

The study consisted of three distinct phases. Phase I involved the analysis of two prestudy samples per analyte by the 20 participating laboratories in order that they become familiar with the methodology employed and to identify any potential problems associated with the analytical methodology. The purgeable halocarbons, were combined into three mixes to minimize interferences from coeluting chromatographic peaks. These mixes were supplied by Monsanto (MC) at two concentrations in sealed glass ampuls. The higher concentration mixes were spiked into drinking water supplied by the individual participating laboratories and the lower concentration mixes were spiked into a wastewater sample supplied by MC. A short report, including the data obtained and any potential problems encountered, was sent to MC by each participating laboratory at the completion of Phase I.

Phase II consisted of a prestudy conference held at EMSL-Cincinnati. Each subcontracting laboratory sent at least one participant to the meeting. The analyst, or principal analyst if more than one was involved, attended this meeting. This meeting held after the data from the prestudy had been evaluated, examined the results of the prestudy and discussed problems encountered in the methodology.

Phase III consisted of the formal interlaboratory study. In the case of Method 601, the analyses of three mixes at each of six concentrations (three Youden pairs) was required in six different water matrices. In addition, the participating laboratories performed an analysis of all water blanks with no spiked compounds. Each participating laboratory then issued a report to MC containing all data obtained, copies of representative chromatograms, and any comments.

The final step in the study was a statistical analysis of all data by Battelle Memorial Laboratories, Columbus, Ohio, under contract 68-03-2624 employing EPA's IMVS system.

SECTION 2

CONCLUSIONS

The object of this study was to characterize the performance of Method 601 in terms of accuracy, overall precision, single-analyst precision and the effect of water types on accuracy and precision. Through statistical analyses of 26,160 analytical values, estimates of accuracy and precision were made and expressed as regression equations, which are shown in Tables 1 and 2. Table 1 presents the linear regression equations as originally calculated by EPA's Interlaboratory Method Validation Study (IMVS) system of computer programs. A detailed examination of the analytical data results in the revised equations presented in Table 2 for 10 of the 28 compounds. Of the 26,160 analytical values only 17% were rejected as outliers.

The accuracy of the method is obtained by comparing the mean recovery to the true values of concentration. For all but two of the 27 analytes, the average accuracy over all six waters ranged from 83% to 108%. The two exceptions were *trans*-1,3-dichloropropene at 76% and *cis*-1,3-dichloropropene at 56% which were found to be unstable.

The overall standard deviation indicates the precision associated with measurements generated by a group of laboratories. The percent relative standard deviation (%RSD) over six waters ranges from 16% to 29% for all but four of the 27 analytes. Exceptions include *cis*-1,3-dichloropropene at 40%, bromomethane gas at 42%, *trans*-1,3-dichloropropene at 45%, and chloromethane gas at 50%.

TABLE 1. REGRESSION EQUATIONS FOR ACCURACY AND PRECISION

WATER TYPE	TRICHLOROFLUOROMETHANE	CHLOROMETHANE	VINYL CHLORIDE	TRANS-1,2-DICHLOROETHENE
APPLICABLE CONC. RANGE	(8.00 - 499.00)	(8.00 - 499.00)	(8.00 - 500.00)	(8.00 - 500.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.15X + 0.67	SR = 0.28X - 0.31	SR = 0.13X + 0.65	SR = 0.11X + 1.46
OVERALL PRECISION	S = 0.26X + 0.91	S = 0.52X + 1.31	S = 0.27X + 0.40	S = 0.17X + 1.46
ACCURACY	X = 0.89C - 0.07	X = 0.77C + 0.18	X = 0.97C - 0.36	X = 0.97C - 0.16
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.22X - 0.03	SR = 0.28X + 0.27	SR = 0.14X - 0.17	SR = 0.16X + 0.29
OVERALL PRECISION	S = 0.30X + 0.64	S = 0.49X + 1.51	S = 0.32X + 0.07	S = 0.24X + 0.95
ACCURACY	X = 0.92C - 1.21	X = 0.91C - 0.99	X = 1.06C - 1.86	X = 0.98C - 1.02
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.15X - 0.42	SR = 0.24X + 1.26	SR = 0.16X + 0.15	SR = 0.12X + 0.36
OVERALL PRECISION	S = 0.25X + 0.02	S = 0.55X + 0.45	S = 0.33X - 0.29	S = 0.21X + 0.59
ACCURACY	X = 0.96C - 1.11	X = 0.99C - 2.07	X = 1.12C - 1.59	X = 1.03C - 0.95
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.18X + 0.46	SR = 0.22X + 2.27	SR = 0.12X + 1.00	SR = 0.13X + 0.27
OVERALL PRECISION	S = 0.31X + 0.20	S = 0.49X + 1.35	S = 0.22X + 1.06	S = 0.23X + 0.96
ACCURACY	X = 0.96C - 0.86	X = 0.94C - 0.87	X = 1.13C - 2.63	X = 1.02C - 1.55
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.14X + 0.69	SR = 0.13X + 3.19	SR = 0.12X + 1.89	SR = 0.10X + 1.11
OVERALL PRECISION	S = 0.28X + 0.26	S = 0.58X + 1.11	S = 0.37X - 0.10	S = 0.15X + 1.47
ACCURACY	X = 0.92C - 1.17	X = 0.81C - 0.16	X = 1.08C - 2.36	X = 1.00C - 0.30
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.16X + 1.12	SR = 0.19X + 4.99	SR = 0.09X + 2.04	SR = 0.14X + 1.20
OVERALL PRECISION	S = 0.29X + 0.75	S = 0.38X + 5.31	S = 0.21X + 1.36	S = 0.28X + 1.21
ACCURACY	X = 0.96C - 1.57	X = 0.70C + 6.44	X = 1.14C - 1.05	X = 1.03C - 0.90

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION

TABLE 1 (continued)

WATER TYPE	1,1,1-TRICHLOROETHANE	TRICHLOROETHENE[a]	DIBROMOCHLOROMETHANE	2-CHLOROETHYLVINYL ETHER[a]
APPLICABLE CONC. RANGE	(8.00 - 500.00)	(8.00 - 501.00)	(8.00 - 488.00)	(8.00 - 501.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.15X + 0.04	SR = 0.13X - 0.03	SR = 0.11X + 1.10	
OVERALL PRECISION	S = 0.20X + 0.37	S = 0.23X + 0.30	S = 0.24X + 1.68	
ACCURACY	X = 0.90C - 0.16	X = 1.32C - 2.52	X = 0.94C + 2.72	
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.14X - 0.33	SR = 0.13X + 0.23	SR = 0.10X + 1.55	
OVERALL PRECISION	S = 0.27X - 0.76	S = 0.32X - 0.57	S = 0.23X + 0.91	
ACCURACY	X = 0.92C + 0.02	X = 1.40C - 3.26	X = 0.98C + 2.89	
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.14X - 0.17	SR = 0.13X - 0.39	SR = 0.12X + 1.22	
OVERALL PRECISION	S = 0.23X - 0.67	S = 0.37X - 0.90	S = 0.25X + 1.44	
ACCURACY	X = 0.94C - 0.00	X = 1.46C - 4.16	X = 0.92C + 1.45	
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.15X + 1.65	SR = 0.10X + 2.22	SR = 0.05X + 3.74	
OVERALL PRECISION	S = 0.30X + 1.24	S = 0.27X + 1.41	S = 0.14X + 3.68	
ACCURACY	X = 0.94C - 0.51	X = 1.35C - 2.49	X = 0.92C + 2.44	
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.10X + 2.01	SR = 0.16X - 0.41	SR = 0.10X + 2.99	
OVERALL PRECISION	S = 0.22X + 0.91	S = 0.25X + 0.50	S = 0.25X + 2.46	
ACCURACY	X = 0.92C + 0.42	X = 1.41C - 3.14	X = 0.95C + 3.27	
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.18X + 2.93	SR = 0.15X + 0.83	SR = 0.13X + 0.49	
OVERALL PRECISION	S = 0.37X - 0.50	S = 0.28X + 0.47	S = 0.28X + 1.18	
ACCURACY	X = 1.11C - 0.17	X = 1.40C - 2.32	X = 0.97C + 3.98	

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equations presented in Table 2

TABLE 1 (continued)

WATER TYPE	TETRACHLOROETHENE	1,2-DICHLOROBENZENE[a]
APPLICABLE CONC. RANGE	(8.00 - 500.00)	(8.00 - 501.00)
DISTILLED WATER		
SINGLE-ANALYST PRECISION	SR = 0.14X + 0.38	SR = 0.10X + 0.97
OVERALL PRECISION	S = 0.18X + 2.21	S = 0.13X + 6.13
ACCURACY	X = 0.94C + 0.06	X = 0.93C + 1.70
TAP WATER		
SINGLE-ANALYST PRECISION	SR = 0.17X + 0.96	SR = 0.12 + 2.02
OVERALL PRECISION	S = 0.25X + 0.58	S = 0.17X + 2.26
ACCURACY	X = 0.96C + 0.35	X = 0.91C + 1.12
SURFACE WATER		
SINGLE-ANALYST PRECISION	SR = 0.13X + 0.71	SR = 0.09X + 0.11
OVERALL PRECISION	S = 0.22X + 0.56	S = 0.19X + 0.38
ACCURACY	X = 0.97C - 0.66	X = 0.90C - 0.28
WASTE WATER 1		
SINGLE-ANALYST PRECISION	SR = 0.22X + 2.54	SR = 0.14X + 0.66
OVERALL PRECISION	S = 0.35X + 2.33	S = 0.19X + 3.30
ACCURACY	X = 0.85C + 0.03	X = 0.89C - 0.29
WASTE WATER 2		
SINGLE-ANALYST PRECISION	SR = 0.18X + 0.20	SR = 0.13X + 0.65
OVERALL PRECISION	S = 0.26X + 0.57	S = 0.18X + 1.26
ACCURACY	X = 0.96C - 0.12	X = 0.91C - 0.47
WASTE WATER 3		
SINGLE-ANALYST PRECISION	SR = 0.13X + 1.03	SR = 0.10X + 0.72
OVERALL PRECISION	S = 0.26X + 1.13	S = 0.17X + 1.79
ACCURACY	X = 0.96C + 1.24	X = 0.91C - 0.71

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equations presented in Table 2

TABLE 1 (continued)

WATER TYPE	BROMOMETHANE[b]	CHLOROETHANE	1,1-DICHLOROETHENE[a]	CHLOROFORM
APPLICABLE CONC. RANGE	(8.00 - 499.00)	(8.00 - 498.00)	(8.00 - 499.00)	(8.00 - 501.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.28X + 0.27	SR = 0.14X - 0.13	SR = 0.21X - 0.23	SR = 0.13X + 0.15
OVERALL PRECISION	S = 0.36X + 0.94	S = 0.17X + 0.63	S = 0.29X - 0.40	S = 0.19X - 0.02
ACCURACY	X = 0.76C - 1.27	X = 0.99C - 1.53	X = 0.98C - 0.87	X = 0.93C - 0.39
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.24X + 0.12	SR = 0.07X + 0.65	SR = 0.12X + 0.13	SR = 0.05X + 5.58
OVERALL PRECISION	S = 0.65X - 0.82	S = 0.19X + 0.39	S = 0.31X - 0.71	S = 0.09X + 6.21
ACCURACY	X = 1.03C - 3.70	X = 1.08C - 1.97	X = 1.03C - 1.16	X = 0.90C + 3.44
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.23X + 1.37	SR = 0.18X + 0.17	SR = 0.10X + 1.46	SR = 0.12X + 1.48
OVERALL PRECISION	S = 0.45X + 1.29	S = 0.22X + 1.70	S = 0.21X + 1.24	S = 0.20X + 0.50
ACCURACY	X = 0.91C - 2.05	X = 1.11C - 1.61	X = 0.98C + 0.05	X = 0.95C + 0.29
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.11X + 1.66	SR = 0.08X + 0.45	SR = 0.19X - 0.81	SR = 0.13X + 0.47
OVERALL PRECISION	S = 0.40X + 1.69	S = 0.09X + 5.79	S = 0.28X + 0.14	S = 0.18X + 1.06
ACCURACY	X = 0.79C + 0.03	X = 1.01C + 0.61	X = 0.93C - 0.07	X = 0.90C + 0.49
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.13X + 2.57	SR = 0.07X + 1.16	SR = 0.07X + 1.82	SR = 0.10X + 0.75
OVERALL PRECISION	S = 0.40X + 0.69	S = 0.22X + 0.87	S = 0.32X + 0.34	S = 0.17X + 0.11
ACCURACY	X = 0.82C - 1.29	X = 1.10C - 2.58	X = 1.05C - 1.82	X = 0.95C - 0.55
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.62	SR = 0.10X + 1.02	SR = 0.14X - 0.58	SR = 0.07X + 2.98
OVERALL PRECISION	S = 0.26X + 2.13	S = 0.29X + 0.35	S = 0.20X + 0.70	S = 0.19X + 2.26
ACCURACY	X = 0.69C + 0.48	X = 1.09C - 1.50	X = 1.02C - 0.82	X = 0.95C + 0.29

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equation presented in Table 2
b = Further comments contained in Section 6

TABLE 1 (continued)

WATER TYPE	CARBON TETRACHLORIDE	TRANS-1,3-DICHLOROPROPENE[a]	1,1,2-TRICHLOROETHANE[a]	BROMOFORM
APPLICABLE CONC. RANGE	(8.00 - 501.00)	(8.00 - 488.00)	(8.00 - 499.00)	(8.00 - 500.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.15X + 0.38	SR = 0.15X + 0.14	SR = 0.13X - 0.04	SR = 0.12X + 0.58
OVERALL PRECISION	S = 0.20X + 0.39	S = 0.40X + 0.26	S = 0.19X + 0.67	S = 0.21X + 2.41
ACCURACY	X = 0.98C - 1.04	X = 0.74C - 0.23	X = 0.86C + 0.30	X = 0.96C - 2.05
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.10X + 1.57	SR = 0.14X + 0.64	SR = 0.06X + 0.99	SR = 0.10X + 0.20
OVERALL PRECISION	S = 0.20X + 1.09	S = 0.39X + 0.79	S = 0.19X + 0.69	S = 0.24X + 1.25
ACCURACY	X = 1.00C - 2.20	X = 0.69C + 0.26	X = 0.84C + 0.83	X = 1.02C - 1.81
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.13X - 0.21	SR = 0.17X + 1.01	SR = 0.12X + 0.47	SR = 0.17X + 0.47
OVERALL PRECISION	S = 0.20X - 0.30	S = 0.39X + 0.73	S = 0.22X + 0.80	S = 0.20X + 1.41
ACCURACY	X = 0.95C - 0.39	X = 0.75C + 1.11	X = 0.85C + 0.39	X = 1.03C - 1.81
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.10X + 0.90	SR = 0.28X + 1.14	SR = 0.17X + 0.15	SR = 0.18X + 0.27
OVERALL PRECISION	S = 0.23X + 1.09	S = 0.64X + 1.60	S = 0.24X + 1.53	S = 0.21X + 1.81
ACCURACY	X = 0.92C - 2.02	X = 0.72C + 0.25	X = 0.78C + 0.03	X= 0.91C - 0.39
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.09X + 1.33	SR = 0.11X + 1.28	SR = 0.09X + 0.83	SR = 0.08X + 2.79
OVERALL PRECISION	S = 0.21X + 0.47	S = 0.37X + 0.91	S = 0.19X + 0.79	S = 0.22X + 2.82
ACCURACY	X = 0.95C - 0.81	X = 0.85C - 0.59	X = 0.93C - 0.40	X = 0.97C - 1.54
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.10X + 1.10	SR = 0.20X - 0.55	SR = 0.08X + 1.52	SR = 0.17X + 1.77
OVERALL PRECISION	S = 0.22X + 2.82	S = 0.51X + 1.78	S = 0.22X + 1.73	S = 0.22X + 2.50
ACCURACY	X = 1.02C - 1.62	X = 0.78C + 1.36	X = 0.92C - 0.15	X = 1.01C - 1.00

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equations presented in Table 2

TABLE 1 (continued)

WATER TYPE	CHLOROBENZENE[a]	1,4-DICHLOROBENZENE[a]
APPLICABLE CONC. RANGE	(8.00 - 500.00)	(8.00 - 499.00)
DISTILLED WATER		
SINGLE-ANALYST PRECISION	SR = 0.15X - 0.02	SR = 0.14X - 0.03
OVERALL PRECISION	S = 0.18X + 1.21	S = 0.28X + 0.13
ACCURACY	X = 1.00C - 1.23	X = 0.80C + 1.23
TAP WATER		
SINGLE-ANALYST PRECISION	SR = 0.07X + 1.71	SR = 0.16X + 0.22
OVERALL PRECISION	S = 0.16X + 1.43	S = 0.20X + 0.74
ACCURACY	X = 1.00C - 1.39	X = 0.81C + 0.60
SURFACE WATER		
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.99	SR = 0.09X + 0.87
OVERALL PRECISION	S = 0.18X + 0.72	S = 0.23X - 0.54
ACCURACY	X = 0.98C - 0.54	X = 0.84C + 1.06
WASTE WATER 1		
SINGLE-ANALYST PRECISION	SR = 0.14X + 63.60	SR = 0.17X + 0.99
OVERALL PRECISION	S = 0.33X + 79.41	S = 0.27X + 0.93
ACCURACY	X = 0.93C + 13.00	X = 0.82C + 1.57
WASTE WATER 2		
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.48	SR = 0.11X + 0.95
OVERALL PRECISION	S = 0.21X + 0.99	S = 0.30X + 0.06
ACCURACY	X = 0.93C - 1.44	X = 0.80C + 0.34
WASTE WATER 3		
SINGLE-ANALYST PRECISION	SR = 0.18X + 2.24	SR = 0.16X + 1.14
OVERALL PRECISION	S = 0.36X + 1.23	S = 0.37X + 0.03
ACCURACY	X = 1.04C + 1.45	X = 0.94C - 1.26

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equations presented in Table 2

TABLE 1 (continued)

WATER TYPE	METHYLENE CHLORIDE	1,1-DICHLOROETHANE[b]	1,2-DICHLOROETHANE[b]	BROMODICHLOROMETHANE
APPLICABLE CONC. RANGE	(8.00 - 501.00)	(8.00 - 499.00)	(8.00 - 500.00)	(8.00 - 501.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.11X + 0.33	SR = 0.09X + 0.17	SR = 0.11X + 0.70	SR = 0.11X + 0.04
OVERALL PRECISION	S = 0.21X + 1.43	S = 0.14X + 0.94	S = 0.15X + 0.94	S = 0.20X + 1.00
ACCURACY	X = 0.91C - 0.93	X = 0.95C - 1.08	X = 1.04C - 1.06	X = 1.12C - 1.02
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.08X + 1.04	SR = 0.09X + 0.47	SR = 0.06X + 1.69	SR = 0.13X + 1.41
OVERALL PRECISION	S = 0.17X + 2.43	S = 0.18X + 1.13	S = 0.18X + 1.21	S = 0.18X + 3.06
ACCURACY	X = 0.97C - 1.50	X = 0.93C - 2.04	X = 1.03C - 0.41	X = 1.00C + 0.96
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.08X + 1.44	SR = 0.06X + 0.68	SR = 0.08X + 0.73	SR = 0.09X + 0.44
OVERALL PRECISION	S = 0.14X + 2.55	S = 0.14X + 1.07	S = 0.18X + 0.89	S = 0.17X + 1.14
ACCURACY	X = 0.99C - 2.08	X = 0.97C - 1.72	X = 1.01C - 1.70	X = 1.12C - 1.63
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.09X + 0.97	SR = 0.13X + 0.70	SR = 0.18X + 7.48	SR = 0.10X + 1.09
OVERALL PRECISION	S = 0.18X + 1.50	S = 0.16X + 0.90	S = 0.28X + 9.59	S = 0.21X + 2.32
ACCURACY	X = 1.00C - 1.76	X = 0.98C - 1.21	X = 0.86C + 11.31	X = 1.09C + 0.32
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.37	SR = 0.13X + 0.17	SR = 0.10X + 0.53	SR = 0.09X + 1.20
OVERALL PRECISION	S = 0.20X + 1.11	S = 0.16X + 0.95	S = 0.18X + 0.89	S = 0.22X + 1.02
ACCURACY	X = 0.98C - 0.28	X = 0.96C - 0.32	X = 0.97C + 0.53	X = 1.09C - 0.47
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.14X + 1.41	SR = 0.12X + 0.24	SR = 0.25X + 14.54	SR = 0.12X + 2.33
OVERALL PRECISION	S = 0.19X + 1.91	S = 0.16X + 0.20	S = 0.71X + 4.18	S = 0.24X + 1.80
ACCURACY	X = 0.95C - 0.31	X = 0.95C - 0.57	X = 0.39C + 50.00	X = 1.04C + 0.86

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
b = Further comments contained in Section 6

TABLE 1 (continued)

WATER TYPE	1,2-DICHLOROPROPANE	CIS-1,3-DICHLOROPROPENE[a]	1,1,2,2-TETRACHLOROETHANE[a]	1,3-DICHLOROBENZENE
APPLICABLE CONC. RANGE	(8.00 - 499.00)	(8.00 - 488.00)	(8.00 - 499.00)	(8.00 - 500.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.18X + 0.49	SR = 0.11X + 0.42	SR = 0.14X + 2.41	SR = 0.14X + 2.33
OVERALL PRECISION	S = 0.28X + 1.17	S = 0.38X - 0.26	S = 0.23X + 2.79	S = 0.26X + 2.34
ACCURACY	X = 1.02C - 0.52	X = 0.59C - 0.90	X = 0.95C + 0.19	X = 0.95C + 0.43
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.19X - 0.61	SR = 0.17X - 0.04	SR = 0.09X + 1.42	SR = 0.15X + 0.64
OVERALL PRECISION	S = 0.27X - 0.10	S = 0.34X + 0.44	S = 0.20X + 1.65	S = 0.24X + 1.48
ACCURACY	X = 0.98C + 1.19	X = 0.60C - 1.07	X = 0.92C - 0.60	X = 0.91C - 0.13
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.67	SR = 0.23X + 0.01	SR = 0.11X + 1.03	SR = 0.15X + 0.45
OVERALL PRECISION	S = 0.21X + 0.94	S = 0.49X + 0.26	S = 0.26X + 0.44	S = 0.23X + 0.69
ACCURACY	X = 0.91C - 0.42	X = 0.56C - 0.13	X = 0.97C - 0.82	X = 0.98C - 0.33
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.17X + 2.88	SR = 0.19X + 1.94	SR = 0.19X + 9.29	SR = 0.21X + 0.37
OVERALL PRECISION	S = 0.30X + 6.59	S = 0.46X + 0.36	S = 0.44X + 3.99	S = 0.29X + 1.19
ACCURACY	X = 0.87C + 4.67	X = 0.61C - 0.70	X = 0.84C + 7.12	X = 0.94C - 0.06
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.20X + 1.42	SR = 0.20X + 0.02	SR = 0.16X + 0.87	SR = 0.14X + 0.64
OVERALL PRECISION	S = 0.30X + 1.63	S = 0.37X + 1.77	S = 0.30X + 1.26	S = 0.20X + 1.60
ACCURACY	X = 1.04C - 0.82	X = 0.50C + 0.69	X = 0.91C - 0.15	X = 0.92C - 0.65
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.21X + 2.19	SR = 0.18X + 1.64	SR = 0.15X + 2.33	SR = 0.13X + 1.98
OVERALL PRECISION	S = 0.33X + 2.65	S = 0.36X + 1.08	S = 0.28X + 2.63	S = 0.23X + 1.27
ACCURACY	X = 1.10C + 1.47	X = 0.53C + 1.35	X = 1.00C + 0.98	X = 0.93C - 0.89

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION
a = Revised equations presented in Table 2

TABLE 2. REVISED EQUATIONS FOR ACCURACY AND PRECISION

WATER TYPE	TRICHLOROETHENE	2-CHLOROETHYLVINYL ETHER	1,2-DICHLOROBENZENE
APPLICABLE CONC. RANGE	(8.00 - 501.00)	(8.00 - 501.00)	(8.00 - 501.00)
DISTILLED WATER			
SINGLE-ANALYST PRECISION	SR = 0.13X - 0.03	SR = 0.10X + 0.94	SR = 0.11X + 0.84
OVERALL PRECISION	S = 0.23X + 0.30	S = 0.29X + 1.65	S = 0.15X + 5.90
ACCURACY	X = 0.87C + 0.48	X = 0.93C + 0.77	X = 0.92C + 1.80
TAP WATER			
SINGLE-ANALYST PRECISION	SR = 0.13X + 0.23	SR = 0.19X - 1.03	SR = 0.12X + 2.02
OVERALL PRECISION	S = 0.32X - 0.57	S = 0.46X + 0.03	S = 0.17X + 2.26
ACCURACY	X = 0.92C - 0.10	X = 0.72C + 1.00	X = 0.91C + 1.12
SURFACE WATER			
SINGLE-ANALYST PRECISION	SR = 0.13X - 0.39	SR = 0.23X - 1.77	SR = 0.11X - 0.03
OVERALL PRECISION	S = 0.37X - 0.90	S = 0.43X - 0.33	S = 0.21X + 0.22
ACCURACY	X = 0.97C - 0.88	X = 0.87C - 0.57	X = 0.89C - 0.19
WASTE WATER 1			
SINGLE-ANALYST PRECISION	SR = 0.10X + 2.22	SR = 0.12X - 0.40	SR = 0.14X + 0.66
OVERALL PRECISION	S = 0.27X + 1.41	S = 0.41X + 0.03	S = 0.19X + 3.30
ACCURACY	X = 0.90C + 0.57	X = 1.01C - 0.19	X = 0.89C - 0.29
WASTE WATER 2			
SINGLE-ANALYST PRECISION	SR = 0.16X - 0.41	SR = 0.14X + 0.07	SR = 0.13X + 0.65
OVERALL PRECISION	S = 0.25X + 0.50	S = 0.39X + 0.23	S = 0.18X + 1.26
ACCURACY	X = 0.95C - 0.02	X = 0.84C - 0.09	X = 0.91C - 0.47
WASTE WATER 3			
SINGLE-ANALYST PRECISION	SR = 0.15X + 0.83	SR = 0.18X + 0.28	SR = 0.10X + 0.72
OVERALL PRECISION	S = 0.28X + 0.47	S = 0.52X - 0.79	S = 0.17X + 1.79
ACCURACY	X = 1.11C + 0.86	X = 0.88C - 0.19	X = 0.91C - 0.71

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION

TABLE 2 (continued)

WATER TYPE	1,1-DICHLOROETHENE	TRANS-1,3-DICHLOROPROPENE	1,1,2-TRICHLOROETHANE
APPLICABLE CONC. RANGE	(8.00 - 499.00)	(8.00 - 488.00)	(8.00 - 499.00)
DISTILLED WATER SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.21X - 0.23 S = 0.29X - 0.40 X = 0.98C - 0.87	SR = 0.15X + 0.83 S = 0.40X + 0.56 X = 0.74C + 0.02	SR = 0.13X - 0.04 S = 0.18X + 1.18 X = 0.87C - 0.00
TAP WATER SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.12X + 0.13 S = 0.31X - 0.71 X = 1.03C - 1.16	SR = 0.14X + 0.64 S = 0.39X + 0.79 X = 0.69C + 0.26	SR = 0.06X + 0.99 S = 0.19X + 0.69 X = 0.84C + 0.83
SURFACE WATER SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.10X + 1.46 S = 0.21X + 1.24 X = 0.93C + 0.05	SR = 0.17X + 1.01 S = 0.39X + 0.73 X = 0.75C + 1.11	SR = 0.12X + 0.47 S = 0.22X + 0.80 X = 0.85C + 0.39
WASTE WATER 1 SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.19X - 0.80 S = 0.32X - 0.06 X = 0.93C - 0.06	SR = 0.28X + 1.14 S = 0.64X + 1.60 X = 0.72C + 0.25	SR = 0.17X + 0.15 S = 0.24X + 1.53 X = 0.78C + 0.03
WASTE WATER 2 SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.07X + 1.82 S = 0.32X + 0.34 X = 1.05C - 1.82	SR = 0.11X + 1.28 S = 0.40X + 0.74 X = 0.87C - 0.76	SR = 0.09X + 0.83 S = 0.19X + 0.79 X = 0.93C - 0.40
WASTE WATER 3 SINGLE-ANALYST PRECISION OVERALL PRECISION ACCURACY	SR = 0.14X - 0.58 S = 0.20X + 0.70 X = 1.02C - 0.82	SR = 0.20X - 0.55 S = 0.51X + 1.78 X = 0.78C + 1.36	SR = 0.08X + 1.52 S = 0.22X + 1.73 X = 0.92C - 0.15

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION

TABLE 2 (continued)

WATER TYPE	CHLOROBENZENE	1,4-DICHLOROBENZENE	CIS-1-3-DICHLOROPROPENE	1,1,2,2-TETRACHLOROETHANE
APPLICABLE CONC. RANGE	(8.00 - 500.00)	(8.00 - 499.00)	(8.00 - 488.00)	(8.00 - 499.00)
DISTILLED WATER				
SINGLE-ANALYST PRECISION	SR = 0.15X - 0.02	SR = 0.10X - 0.61	SR = 0.11X + 0.42	SR = 0.14X + 2.41
OVERALL PRECISION	S = 0.18X + 1.21	S = 0.43X - 1.19	S = 0.38X - 0.26	S = 0.23X + 2.79
ACCURACY	X = 1.00C - 1.23	X = 0.96C - 0.28	X = 0.59C - 0.90	X = 0.95C + 0.19
TAP WATER				
SINGLE-ANALYST PRECISION	SR = 0.07X + 1.71	SR = 0.06X + 0.54	SR = 0.17X - 0.04	SR = 0.09X + 1.43
OVERALL PRECISION	S = 0.16X + 1.43	S = 0.26X + 0.21	S = 0.34X + 0.44	S = 0.21X + 1.53
ACCURACY	X = 1.00C - 1.39	X = 0.98C - 0.97	X = 0.60C - 1.07	X = 0.93C - 0.71
SURFACE WATER				
SINGLE-ANALYST PRECISION	SR = 0.12X + 1.04	SR = 0.05X + 0.73	SR = 0.23X + 0.01	SR = 0.11X + 1.03
OVERALL PRECISION	S = 8.18X + 0.89	S = 0.19X - 0.16	S = 0.49X + 0.26	S = 0.26X + 0.44
ACCURACY	X = 0.98C - 0.41	X = 0.95C + 0.03	X = 0.56C - 0.13	X = 0.97C - 0.82
WASTE WATER 1				
SINGLE-ANALYST PRECISION	SR = 0.14X + 63.40	SR = 0.12X + 0.34	SR = 0.20X + 1.90	SR = 0.19X + 9.29
OVERALL PRECISION	S = 0.33X + 79.41	S = 0.39X - 0.16	S = 0.48X + 0.24	S = 0.30X + 3.99
ACCURACY	X = 0.93C + 13.00	X = 0.99C - 0.06	X = 0.63C - 0.87	X = 0.84C + 7.12
WASTE WATER 2				
SINGLE-ANALYST PRECISION	SR = 0.12X + 0.48	SR = 0.07X + 0.73	SR = 0.20X + 0.02	SR = 0.16X + 0.87
OVERALL PRECISION	S = 0.21X + 0.99	S = 0.40X - 0.69	S = 0.37X + 1.77	S = 0.30X + 1.26
ACCURACY	X = 0.93C - 1.44	X = 0.96C - 1.10	X = 0.50C + 0.69	X = 0.91C - 0.15
WASTE WATER 3				
SINGLE-ANALYST PRECISION	SR = 0.18X + 2.24	SR = 0.09X + 0.95	SR = 0.18X + 1.64	SR = 0.15X + 2.33
OVERALL PRECISION	S = 0.36X + 1.23	S = 0.37X + 0.03	S = 0.36X + 1.08	S = 0.28X + 2.63
ACCURACY	X = 1.04C + 1.45	X = 1.08C - 2.55	X = 0.53C + 1.35	X = 1.00C + 0.98

X = MEAN RECOVERY
C = TRUE VALUE FOR THE CONCENTRATION

The gases are expected to be less precise due to handling problems associated with both the sample and standard preparations. The average precision of all analytes in a given water was relatively independent of water type, ranging from 24% to 29% for the six water matrices. In all cases, as expected, the highest %RSD (poorest precision) occurred at the lowest Youden pair concentration. The precision is acceptable at all levels when the background interferences are minimal.

The single-analyst standard deviation indicates the precision associated with a single laboratory. The percent relative standard deviation for a single analyst (%RSD-SA), averaged overall the waters, ranged from 10% to 22% for the 27 analytes, while the average value of %RSD-SA for all analytes in a given water ranged from 12% to 15%. In all cases, the highest %RSD-SA (poorest precision) was associated with the lowest Youden pair concentration. The precision is acceptable at all levels where background interference is minimal.

Statistical comparisons of the effect of water type were performed on all amalytes. These indicated a statistical effect of water matrix on the accuracy or precision of Method 601 in the following cases:

Carbon tetrachloride in wastewater 1
Chlorobenzene in wastewater 1
1,4-Dichlorobenzene in wastewater 3, and
1,2-Dichloroethane in wastewater 3.

SECTION 3

RECOMMENDATIONS

Method 601 is recommended for the analysis of purgeable halocarbons in municipal and industrial wastewaters. The accuracy and precision are acceptable, while the matrix effects are significant only at low concentration levels.

Care should be taken in the handling or packing of the chromatographic columns. Any type of mechanical shock may damage the fragile packing material and produce fines which result in plugged columns, decreased separation efficiency, and/or a contaminated detector furnace.

Metal columns are not recommended as they may be adversely affected by halogen compounds.

The proper size quartz combustion tube should be flamed prior to installation.

Care must be taken in obtaining laboratory pure ("organic-free") water. The use of an activated carbon column to purify distilled water is recommended. The waters should be capped tightly to prevent contamination from solvent vapors in the laboratory atmosphere.

The analyst should check the analytical curve for linearity. Several laboratories reported non-linearity above 200 ppt.

It is recommended that the purity of cis and trans-1,3-dichloropropene standard materials be checked. Some laboratories have observed impurities of 1,2 dichloropropane as a decomposition product.

Extra care should be observed in the preparation of gaseous standards due to potential losses of analyte. It is recommended that at least 10 mg. of standard be weighed for the standard solution to allow three significant figures in the calculations. Premixed standards for gases are not recommended due to instability.

SECTION 4

DESCRIPTION OF THE STUDY

Before initiation of the study, MC performed preliminary studies of method detection limit in both reagent water and two wastewaters; analytical curves for individual compounds over a wide range of concentrations; and stability studies on the ampul solutions used in the study. The objective of these preliminary studies was to develop a detailed knowledge of the Method 601 procedure before the 20 participating laboratories began their analyses. This put MRC in a position to offer assistance to these laboratories if they experienced difficulties during the method study.

SELECTION OF PARTICIPATING LABORATORIES

In June, 1980, MC, as prime contractor, sent requests for quotation (RFQ) to approximately 150 laboratories which had been identified as potential subcontractors for this interlaboratory study.

The RFQ contained a Scope of Work, the fixed price allowed for the effort, a description of the projected timing of the required analyses, and a copy of the analytical method. A copy of Method 601 is presented in Appendix A of this report. Interested laboratories were asked to respond to the RFQ describing:

- Facilities available at the laboratory, including all instrumentation to be used for the study.

- Previous experience in carrying out the types of analyses specified in the Scope of Work for the compounds of interest.

- Handling procedures for working with hazardous and potentially hazardous chemicals.

- The organization and managerial structure of the laboratory, identifying those personnel involved in managing this study.

- The analyst involved in the analyses to be performed, including his/her experience.

- Quality control/quality assurance procedures and good laboratory practices followed by the laboratory.

Approximately 25 proposals were received in response to the RFQ. These proposals were ranked and the 20 most qualified laboratories were selected for participation. Table 3 gives the list of participating laboratories for the Method 601 interlaboratory study. Throughout this report, data provided by these laboratories will be identified only by an anonymous code number.

TABLE 3. PARTICIPATING LABORATORIES

Acurex Corporation
285 Clyde Avenue
Mountain View, CA 94042

Analytics
Division of CBL
Subsidiary of Rohm & Haas Co.
1415 Rhoadmiller
Richmond, VA 23260

Clayton Environmental Consultants, Inc.
25711 Southfield Road
Southfield, MI

Engineering Science, Inc.
Research and Development Laboratory
600 Bancroft Way
Berkeley, CA 94710

Environmental Research Group, Inc.
117 North First
Ann Arbor, MI 48104

ERCO/Energy Research Co., Inc.
185 Alewife Brook Parkway
Cambridge, MA 02138

Global Geochemistry Corp.
6919 Eton Avenue
Canoga Park, CA 91303

Jacobs Laboratories (formerly PJB Laboratories)
373 South Fair Oaks Avenue
Pasadena, CA 91105

Normandeau Associates, Inc. (formerly Texas Instruments, Inc.)
1710 Firman Drive
Richardson, TX 75081

Northrop Services, Inc.
Environmental Services
P.O. Box 3437
Little Rock, AR 72203

O'Brien & Gere Engrs., Inc.
Box 4873
1304 Buckley Road
Syracuse, NY 13221

Orlando Laboratories, Inc.
P.O. Box 8008
90 West Jersey Street
Orland, FL 32806

PEDCo Environmental, Inc.
11499 Chester Road
Cincinnati, OH 45246

SERCO Laboratories
Sanitary Engineering Laboratories, Inc.
1931 West County Road, C2
Roseville, MN 55113

State of New York
Department of Health
Tower Building
The Governor Nelson A. Rockeller Empire State Plaza
Albany, NY 12201

Technical Services, Inc.
103-7 Stockton Street
P.O. Box 52329
Jacksonville, FL 32201

UBTL, Division of University of Utah Research Institute
520 Wakara Way
Salt Lake City, UT 84108

Versar, Inc.
6621 Electronic Drive
Springfield, VA 22151

Weston Designers Consultants
Weston Way
West Chester, PA 19380

Wilson Laboratories
Analytical & Research Chemists and Biologists
528 North Ninth
Salina, KS 67401

PHASE I - ANALYSIS OF PRESTUDY SAMPLES

In November 1980, MC forwarded to each participating laboratory six sealed glass ampuls containing three mixtures each at two concentration levels. The higher concentration mixes of these purgeable halocarbons were to be spiked into reagent water provided by the laboratories, while the lower concentrations were to be spiked into a wastewater supplied by MRC. Also forwarded were procedures for the preparation of stock solutions, the preparation of aqueous calibration standards, and for spiking tap water and wastewater with the samples contained in the ampuls. These recommended procedures are presented in Tables 4, 5, and 6. Some notes on Method 601 were also sent to each participating laboratory and are presented in Appendix B herein. These notes included specifications of purge/trap samplers that could be employed, acceptable chromatographic detectors, and the chromatographic column to be employed. Also included in the information packet was a list of some of the suppliers for volatile organic compounds as presented in Table 7, and procedures for cleaning a Hall® detector cell (see Table 8).

TABLE 4. PROCEDURES FOR PREPARATION OF STOCK SOLUTIONS

1. Place about 9.8 mL of methyl alcohol into a ground-glass stoppered 10-mL volumetric flask.

2. Allow the flask to stand unstoppered about 10 minutes or until all alcohol wetted surfaces have dried.

3. Weigh the flask to the nearest 0.1 mg.

4. Using a 100 µL syringe, immediately add 2 drops of the reference standard to the flask, then reweigh. Be sure that the 2 drops fall directly into the alcohol without contacting the neck of the flask.

5. Dilute to volume, stopper, then mix by inverting the flask several times.

6. Transfer the solution to a dated and labeled 15 mL screw-cap bottle with a Teflon® cap liner.

7. Calculate the concentration in micrograms per microliter from the net gain in weight.

8. Store the solution at 4°C.

NOTE: All standard solutions prepared in methyl alcohol are stable up to four weeks when stored under these conditions. They should be discarded after that time has elapsed.

NOTE: Because of the toxicity of the purgeables, it is necessary to prepare primary dilutions in a hood. It is further recommended that a NIOSH/MESA approved toxic gas respirator be used when the analyst handles high concentrations of such materials.

TABLE 5. PROCEDURES FOR PREPARATION OF AQUEOUS CALIBRATION STANDARDS

In order to prepare accurate standard solutions, the following precautions must be observed.

- Do not inject more than 20-µL of alcoholic standards into 100 mL of organic-free water. Do not inject into organic-free water solvents that are immiscible such as hexane or methylene chloride.
- Use a 25-µL Hamilton 702N microsyringe or equivalent. (Variations in needle geometry will adversely affect the ability to deliver reproducible volumes of methanolic standards into water.)
- Rapidly inject the alcoholic standard into the expanded area of the filled volumetric flask. Remove the needle as fast as possible after injection.
- Mix aqueous standards by inverting the flask three times only.
- Never use pipets to dilute or transfer samples or aqueous standards.
- Aqueous standards when stored with a headspace are not stable and should be discarded after one hour.

TABLE 6. PROCEDURES FOR SPIKING WATER

If duplicate analyses are to be performed on one ampul, concurrently perform all the steps below in duplicate.

- Fill a 100-mL volumetric flask to volume with organic-free water.
- Stabilize the ampuls to 20°C.
- Use a 25 µL Hamilton 702N microsyringe or equivalent. (Variations in needle geometry will adversely affect the ability to deliver reproducible volumes of methanolic standards into water.)
- Open the ampuls by breaking the top off at the break area on the neck and immediately fill the syringe.
- Rapidly inject 20 µL of the ampul concentrate into the expanded area of the filled volumetric flask. Remove the needle as fast as possible after injection.
- Mix the sample by inverting the flask three times only.
- Never use pipets to dilute or transfer samples or aqueous standards.
- Aqueous standards when stored with a headspace are not stable and should be discarded after one hour.

TABLE 7. LIST OF SUPPLIERS FOR VOLATILE ORGANIC COMPOUNDS

Chemical	Suppliers[a]
Bromodichloromethane	1, 3
Bromoform	1, 2, 3
Bromomethane	4, 5
Carbon tetrachloride	1, 2, 3
Chlorobenzene	1, 2, 3
Chloroethane	2, 3, 4, 5
2-Chloroethylvinyl ether	1, 3
Chloroform	1, 2, 3
Chloromethane	4, 5
Dibromochloromethane	1, 3
1,2-Dichlorobenzene	1, 2, 3
1,3-Dichlorobenzene	1, 2
1,4-Dichlorobenzene	1, 2,
Dichlorodifluoromethane	4, 5
1,1-Dichloroethane	1, 3
1,2-Dichloroethane	1, 2, 3
1,1-Dichloroethene	1
trans-1,2-Dichloroethene	2, 3
1,2-Dichloropropane	1, 2, 3
cis-1,3-Dichloropropene	6
trans-1,3-Dichlorpropene	6
Methylene chloride	1, 2, 3
1,1,2,2-Tetrachloroethane	1,
Tetrachloroethene	1, 2, 3
1,1,1-Trichloroethane	1, 2, 3
1,1,2-Trichloroethane	1, 3
Trichloroethene	1, 2, 3
Trichlorofluoromethane	4
Vinyl chloride	-[b]

[a]Key to suppliers:
1 = Aldrich Chemical Company
2 = Fisher Scientific
3 = Chem Services
4 = Matheson Gas
5 = Linde Gas
6 = Columbia Organic Chemicals.

[b]No known supplier found.

TABLE 8. MAINTENANCE PROCEDURE FOR HALL 700 DETECTOR

1. Clean Cell

   a. Sonicate disassembled cell components in 25-33% H_3PO_4 for 10 minutes in 100-mL beaker.

   b. Rinse three times with distilled water.

   c. Sonicate with 75 mL distilled water for 5 minutes.

   d. Sonicate with dilute HCl (1-2%) for 10 minutes.

   e. Rinse three times with n-propanol.

   f. Sonicate in 50-75 mL n-propanol for 5 minutes.

   g. Pour off n-propanol and drain cell components on Kim-Wipes.

   h. Reassemble cell wet and install.

2. Clean 1/4" → 1/16" stainless steel union connecting quartz tube with Teflon® transfer line. Use same procedure and clean along with cell.

3. Clean Teflon® transfer line between quartz tube and cell by flushing with concentrated HCl using Pasteur pipette. Connect to stainless steel union and blow out with effluent gases for 3-4 minutes before attaching to cell.

4. Quartz combustion tubes should be conditioned before use:

   a. Soak in aqua regia for 24-48 hours. Pour off.

   b. Soak in dilute (~1%) HCl for 2 hours.

   c. Air dry.

(continued)

TABLE 8 (continued)

d. Heat to red hot from center out with Fisher burner.

e. Cool and install in furnace, being careful not to scratch inner surface of tube.

NOTE: The torching alone produces ~90% of the improvement in tube performance.

5. Solvent - use 100% n-propanol with 50% each #77 and #150 resin. Be sure glass wool is unsilanized. Flush resin with 150 mL n-propanol to remove methanol from slurry.

6. Assembly of quartz tube:

a. Use 1/4" or 6 mm Vespel® ferrules to prevent later development of leaks.

b. After seating ends of tube into fittings, pull out 1/6" - 1/8" before torquing down. Vespel® ferrules tend to pull the tube towards the fitting and this will prevent the tube from breaking.

c. Teflon® tube should extend about 1/4" into 1/4" section of the 1/4" → 1/6" union.

PHASE II - PRESTUDY CONFERENCE

After the participating laboratories analyzed the prestudy conference samples, the analysts from the 20 participating laboratories met at EMSL-Cincinnati on January 15, 1981 to discuss Method 601 procedure and potential problems. Potential problems identified at this meeting are summarized below.

- The most common comment about Method 601 was the difficulty in obtaining an "organic-free" blank (distilled water). Two methods were suggested:

  - Boil the distilled water, cap tightly, and use immediately
  - Run distilled water through an activated carbon column. Cap tightly and use immediately.

- Reductions in column flow during the course of an analysis indicated that the chromatographic column needed to be repacked. The packing material for Method 601 is very fragile and easily damaged, giving less than optimal results.

- Metal columns have exhibited some adverse characteristics with halogenated compounds. Their use is not recommended.

- Several laboratories reported problems preparing gaseous analytical standards. Cooling the solvents in dry ice will aid in preparation of these standards.

- A number of laboratories inquired about MRC supplying the participating laboratories with stock standard mixes for the method study (Phase III). Since this would eliminate a valid bias from the study, it was decided that all laboratories should prepare the Method 601 standard mixes from neat materials.

- Difficulties were reported in trying to maintain the oven temperature of non-cryogenic gas chromatographs at 50°C during the initial portion of the chromatographic run.

- Some laboratories reported better results with Vespel® ferrules than with graphite ferrules.

- Two similar sizes of combustion tubes were available. In some cases it might be necessary to check the diameter of the tube to assure that the proper size was used. The quartz tubes must be flamed before installation.

PHASE III - INTERLABORATORY METHOD STUDY

The method study samples were sent to the participating laboratories in March 1981. The design of the method interlaboratory study was based on Youden's original non-replicate design [1] for collaborative evaluation of precision and accuracy for analytical methods. According to Youden's design, two similar yet different samples are analyzed in pairs. The analyst is directed to do a single analysis and report one value for each sample.

Six spiking solutions were prepared for each of the three mixes, resulting in three different concentration ranges for each of the purgeable halocarbons. Each concentration range was represented by two solutions (a Youden pair). The low level concentration after spiking in water matrix was designed to approximate very low levels of the halocarbons (8 to 10 µg/L). The intermediate concentration range was 80-100 µg/L. The highest concentration range was to be a factor 8 to 10 times the middle concentration. Table 9 shows the calculated concentration of individual halocarbon for each ampul after spiking by the required procedure in a water matrix.

TABLE 9. CONCENTRATIONS OF METHOD 601 PARAMETERS IN SPIKED SOLUTIONS (µg/L)

Parameter	Ampul A	B	C	D	E	F
Mix #1						
Trichlorofluoromethane	8	10	40	50	400	499
Chloromethane	8	10	40	50	399	499
Vinyl chloride	8	10	40	50	401	500
trans-1,2-Dichloroethene	8	10	40	50	400	500
1,1,1-Trichloroethane	8	10	40	50	399	500
Trichloroethene	8	10	80	100	399	501
Dibromochloromethane	8	10	80	102	400	488
2-Chloroethylvinyl ether*	8	10	80	100	-	-
Tetrachloroethene	8	10	80	100	399	500
1,2-Dichlorobenzene	8	10	80	100	399	501
Mix #2						
Bromomethane	8	10	80	100	398	499
Chloromethane	8	10	40	50	399	498
1,1-Dichloroethene	8	10	40	50	400	499
Chloroform	8	10	40	50	400	501
Carbon tetrachloride	8	10	40	50	399	501
trans-1,3-Dichloropropene	8	10	80	100	400	488
1,1,2-Trichloroethane	8	10	80	100	401	499
Bromoform	8	10	80	101	399	500
Chlorobenzene	8	10	80	100	400	500
1,4-Dichlorobenzene*	8	10	80	100	-	-
Mix #3						
Methylene chloride	8	10	40	50	401	501
1,1-Dichloroethane	8	10	40	50	400	499
1,2-Dichloroethane	8	10	40	50	399	500
Bromodichloromethane	8	10	40	50	394	501
1,2-Dichloropropane	8	10	80	100	400	499
cis-1,3-Dichloropropene	8	10	80	100	400	488
1,1,2,2-Tetrachloroethane	8	10	80	100	400	499
1,3-Dichlorobenzene	8	10	80	100	399	500

*Further discussion of these compounds are presented in Section 6.

Verification of the ampul concentrations was performed by both MRC and the Quality Assurance Branch of EMSL-Cincinnati. MRC employing Method 601 performed zero day analyses on all ampul concentrations and six month stability on one low concentration and one high concentration. QAB analyzed only those compounds which were not verified by MRC as stable employing direct injection GC-MS. See the discussion section for more details.

Instructions to participating laboratories for the analysis of the halocarbons in the six water matrices included the procedures for preparation of stock solutions, preparation of calibration standards and preparation of quality control samples that had been recommended for the prestudy conference analysis (see Table 6 through 8). In addition each laboratory was instructed to perform their analyses in the following manner:

1. A total of 114 analyses (108 spiked samples and six water blanks) are to be performed by each participating laboratory.

2. The six water types to be used in the study are:

   (1) distilled water from your laboratory,

   (2) tap water from your laboratory,

   (3) a surface water collected by you from a location near your laboratory,

   (4) three industrial wastewaters supplied by MRC.

3. Each laboratory will receive 19 individual bottles of each of the three wastewaters. Use one bottle for each ampul and one bottle for the blank analysis.

4. Follow "Recommended Procedure for Preparation of Halogenated Purgeable Quality Control Samples" for spiking waters with contents of the ampuls.

5. For each of the six types of waters listed above, spike 100 mL of water with 20 µL of each of the following ampuls:

601 Mix #1 Conc. 1	601 Mix #1 Conc. 2	601 Mix #1 Conc. 3
601 Mix #1 Conc. 4	601 Mix #1 Conc. 5	601 Mix #1 Conc. 6
601 Mix #2 Conc. 1	601 Mix #2 Conc. 2	601 Mix #2 Conc. 3
601 Mix #2 Conc. 4	601 Mix #2 Conc. 5	601 Mix #2 Conc. 6
601 Mix #3 Conc. 1	601 Mix #3 Conc. 2	601 Mix #3 Conc. 3
601 Mix #3 Conc. 4	601 Mix #3 Conc. 5	601 Mix #3 Conc. 6

In addition, analyze one blank. It is not necessary to analyze one blank per mix. For each wastewater you have been supplied with only one bottle for blank analyses.

(6) Report results on the forms provided in µg/liter of the spiked water sample (or blank) using the following significant figure format:

XXX
XX.X
X.XX
0.XX

The results from the 20 participating laboratories for analysis of the 28 halocarbons in the six water matrices are tabulated in Appendix C. All values shown are corrected for the blank values.

SECTION 5

STATISTICAL TREATMENT OF DATA

Data obtained from the interlaboratory study were subjected to statistical analyses by the Battelle Columbus Laboratories, Columbus, Ohio, under EPA Contract 68-03-2624. The analyses were performed employing U.S. EPA's Interlaboratory Method Validation Study (IMVS) system [2] of computer programs. This system of programs was designed to implement ASTM procedure D2777, "Standard Practice for Determination of Precision and Bias of Methods of Committee D-19 on Water" [3]. The analyses conducted using the IMVS system included tests for the rejection of outliers (both whole laboratories for a water-type and individual data points), estimation of mean recovery (accuracy), estimation of single-analyst and overall precision, and tests for the effects of water type on accuracy and precision.

REJECTION OF OUTLIERS

An outlying observation, or "outlier," is a data point that appears to deviate markedly from other members of the sample in which it occurs. Outlying data points are commonly encountered during interlaboratory test programs. If they are not removed, they can distort the accuracy and precision statistics which characterize the analytical method. These outlying points cannot be removed indiscriminantly, however, because they may represent an extreme manifestation of the random variability inherent in the method.

ASTM procedure E178-80, "Standard Practice for Dealing with Outlying Observations" [4], and ASTM procedure D2777-77 [3] present explicit statistical rules and methods for identification of outliers.

Data from outlying laboratories for a particular water type were rejected employing Youden's laboratory ranking test procedure [3, 5] at the 5% level of significance. Data remaining after the laboratory ranking procedure were subjected to individual outlier tests. After zero, missing, "less than," and "nondetect" data were rejected as outliers, the average and standard deviation for remaining data were calculated. The data then were examined for additional outliers employing the two-sided Thompson's T-test for outlier rejection [6]. Data rejected as outliers for this study are identified by an asterisk in the tables of raw data shown in Appendix D.

Youden's Laboratory Ranking Procedure

Using the data for each water type, Youden's laboratory ranking test [3, 5] was performed at the 5% level of significance. The Youden laboratory ranking procedure requires a complete set of data from each laboratory within each water type. Missing data from laboratory "i" for water type "j" were replaced by the following procedure. Letting X_{ijk} denote the reported measurement from laboratory "i" for water type "j" and concentration level C_k, it is assumed that

$$X_{ijk} = \beta_j \cdot C_k^{\gamma_j} \cdot L_i \cdot \varepsilon_{ijk} \qquad (1)$$

where β_j and γ_j are fixed parameters which determine the effect of water type j; L_i is the systematic error due to laboratory "i", and ε_{ijk} is the random within-laboratory error.

Taking natural logarithms, it follows that

$$\ell n\ X_{ijk} = \ell n\ \beta_j + \gamma_j\ \ell n\ C_k + \ell n\ L_i + \ell n\ \varepsilon_{ijk} \qquad (2)$$

which is a linear regression model with dependent variable $\ell n\ X_{ijk}$ and independent variable $\ell n\ C_k$. (Details and justification for this model are discussed in the section "Comparison of Accuracy and Precision Across Water Types.")

The natural logarithms of the individual laboratory's data were regressed against the natural logarithms of the true concentration levels for the six ampuls in each water type. The predicted values for $\ell n\hat{}X_{ijk}$ were obtained from the regression equation, and the missing values for X_{ijk} were estimated by $X_{ijk} = \exp(\ell n\hat{}X_{ijk})$. (For complete details of this procedure, see Reference 2.)

An example of the use of Youden's laboratory ranking procedure is presented in Table 10, where the rankings of the values for chloromethane in water 6 are listed for each laboratory and for ampuls 1 through 6. For 20 laboratories and six ampuls, the upper and lower critical limits of the sums of the rankings are 104 and 22. If the sum of the rankings of any laboratory equals or exceeds 104 or is equal or less than 22 that laboratory's data are rejected for all determinaitons for that analyte (chloromethane) in that water (water 6). From Table 10, is is apparent that the data from laboratories 6, 11, 15, and 17 must be rejected. The estimated missing data were then removed from the data sets.

Test for Individual Outliers

The data remaining after rejection of zero, missing, "less than," and "nondetect" data were subjected to an individual outlier test based on calculation of Thompson's T-value.

TABLE 10. YOUDEN LABORATORY RANKING PROCEDURE FOR CHLOROMETHANE DATA IN WATER 6

Laboratory number	Ranking values						Cumulative score
	Ampul 1	Ampul 2	Ampul 3	Ampul 4	Ampul 5	Ampul 6	
1	7	14	8	4	13	5	51.0
2	12	15	13	14	15	18	87.0
3	3	7	17	18	14	15	74.0
4	14	13	10	12	11	11	71.0
5	5	4	4	10	17	17	57.0
6	17.5	19	19	19.5	19.5	19.5	144.0[a]
7	11	9.5	9	7	6	7	49.5
8	17.5	16	15	16	7	13	84.5
9	9	11	7	6	3.5	4	40.5
10	13	8	6	9	1	1	38.0
11	4	6	2	3	3.5	3	21.5[a]
12	6	5	16	11	18	10	66.0
13	17.5	2	4	8	5	12	58.5
14	10	12	5	5	10	6	48.0
15	1	1	1	1	2	2	8.0[a]
16	2	3	3	2	9	14	33.0
17	17.5	19	19	19.5	19.5	19.5	114.0[a]
18	17.5	19	19	17	8	8	88.5
19	8	9.5	11	15	16	16	75.5
20	17.5	17	12	13	12	9	80.5

[a]Laboratories rejected versus upper and lower criteria of 104 and 22.

The criterion for rejection of individual outliers is based on calculation of the T-value [3,6].

In these calculations the mean recovery, $\bar{x}$, is given by

$$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} x_i \qquad (3)$$

and the standard deviations, s, is given by

$$S = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2} \qquad (4)$$

where x_i = individual analyses
n = number of retained analyses values in the ampul set

Thompson's T is defined by

$$T = \frac{x_e - \bar{x}}{S} \tag{5}$$

where x_e is the retained x_i value farthest away from the mean ($\bar{x}$) of the set of retained values.

The outlier may be rejected if the value of T calculated exceeds the critical value for T (two-sided test) as presented in Table 11. The 5% significance level was employed. If the extreme value is rejected as an outlier, the test is repeated for the next extreme value among the data until the value being tested is less than the critical T-value.

TABLE 11. CRITICAL VALUES FOR THOMPSON'S T (TWO-SIDE TEST) WHEN STANDARD DEVIATION IS CALCULATED FROM THE SAME SAMPLES

Number of observations, n	5% significance level
6	1.89
7	2.02
8	2.13
9	2.21
10	2.29
11	2.36
12	2.41
13	2.46
14	2.51
15	2.55
16	2.58
17	2.62
18	2.65
19	2.68
20	2.71

Table 12 summarizes calculations to examine suspect data points for chloromethane in water 6 by the T-test outliers.

TABLE 12. RESULTS OF TEST FOR INDIVIDUAL OUTLIERS (CHLOROMETHANE IN WATER 6)

Ampul	Lab	Extreme Value x_e	Mean $(\bar{x})$	Standard deviation (s)	Calculated T $\frac{x_e - \bar{x}}{(s)} = T$	Number of points n	Critical T T_c	Decision
3	16	91.0	29.5	23.7	2.60	15	2.55	Reject
4	16	127.0	43.5	28.7	2.91	16	2.58	Reject
5	10	1150	355	234	3.40	16	2.58	Reject
6	10	1910	512	389	3.60	16	2.58	Reject

As shown in Table 12, four additional data points are identified as outliers by the Thompson's T-test for the illustrative example of the analyte chloromethane in water 6. In summary, of the original 120 data points for chloromethane in water 6 (20 laboratories x six ampuls), all data points for laboratories 6, 11, 15, and 17 were rejected on the basis of Youden's laboratory ranking procedure (total of 24 points), and four additional data points were found to be outliers based on the T-test (for a total of the 28 data points that are identified by an asterisk as outliers in Table 19). These same tests were applied for all other analytes in all six waters.

STATISTICAL SUMMARIES

After the outlier rejection tests were performed, the following summary statistics were calculated employing the remaining data for each ampul (single analyte, single concentration, single water matrix):

- Number of retained data points, n
- Mean recovery of retained data, $\bar{X}$

- Accuracy as a percent of relative error, % RE
- Overall absolute standard deviation, S
- Percent relative overall standard deviation, % RSD
- Absolute single-analyst standard deviation, SR
- Percent relative single-analyst standard deviation, % RSD-SA

All of these statistics, except the single-analyst absolute and relative standard deviations, were calculated using the retained data for each ampul. The basic statistical formulas used for these calculations are given below, where X_1, X_2,..., X_n denote the values for the n retained data points for a given ampul.

Mean Recovery ($\bar{X}$):

$$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i \qquad (3)$$

Accuracy as a % Relative Error:

$$\% \text{ RE} = \frac{\bar{X} - \text{true value}}{\text{true value}} \times 100 \qquad (6)$$

Overall Standard Deviation:

$$S = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (X_i - \bar{X})^2} \qquad (4)$$

and

Percent Relative Overall Standard Deviation:

$$\% \text{ RSD} = \frac{S}{\bar{X}} \times 100 \qquad (7)$$

The overall standard deviation, S, indicates the precision associated with measurements generated by a group of laboratories. This represents the broad variation in the data collected in a collaborative study. A measure of how well an individual analyst can expect to perform in his own laboratory is another important measure of precision. This single-analyst precision, denoted by SR, is measured by

$$SR = \sqrt{\frac{1}{2(m-1)} \sum_{i=1}^{m} (D_i - \bar{D})^2} \qquad (8)$$

where m = number of retained Youden-paired observations
D_i = difference between observations in the ith pair
$\bar{D}$ = average of D_i values

The Youden-pair design employed in this study permits the calculation of this single-analyst precision without making duplicate measurements on the same sample. This helps to avoid the well-intentioned manipulation of data that can occur when laboratories make duplicate analyses.

The percent relative standard deviation for the single-analyst precision is calculated by

$$\% \text{ RSD-SA} = \frac{S_R}{\bar{X}^*} \times 100 \qquad (9)$$

where $\bar{X}^*$ is the average of the two mean recoveries corresponding to the two ampuls defining the particular Youden pair. These summary statistics are presented in Appendix D for each of the 27 halocarbons in the six water matrices.

REGRESSION ANALYSIS OF BASIC STATISTICS

Systematic relationships frequently exist between the mean recovery statistics and the true concentration levels across ampuls, and between the precision statistics and the mean recovery statistics. Given a plot of precision values versus concentration levels, a smooth curve drawn through the points can show that the precision is found to (1) be constant and not vary with level, (2) vary directly with level in a linear manner, or (3) vary with level in a curvilinear fashion.

To derive statements for method accuracy and precision, the basic statistics were regressed assuming linear relationships, fitting the data to a line using weighted least-squares. The weights were chosen to be inversely related to the true concentration in the case of accuracy and inversely related to the mean recovery in the case of precision. The inverse weightings were employed to minimize skewing created by the high Youden-pair data. The results of the regression analyses are discussed below.

Statements of Method Accuracy

The accuracy is characterized by comparing the mean recovery of the analyte, $\bar{X}$, to the true concentration level of the compound, C, in the spiked solution. The IMVS program conducts these calculations via matrix algebra, where weighted least-squares linear regression of $\bar{X}$ versus C is conducted with weights chosen to be inversely related to the square of the true concentration levels (see page 108 of Reference 2 for details). This method is equivalent to that suggested by Britton [7] where the linear regression for $\bar{X}$ versus C is achieved by using the customary least-squares algorithm to fit:

$$\frac{\bar{X}}{C} = a + b\left(\frac{1}{C}\right) \qquad (10)$$

which can then be converted to the desired relationships by multiplying through by C, giving:

$$\bar{X} = aC + b \tag{11}$$

If the intercept (b) associated with the fitted line is negligible (i.e., essentially zero), then the slope (a) provides a unique value which represents the percent recovery over all the concentration levels.

Statements of Method Precision

The precision of Method 601 is characterized by comparing the overall and single-analyst standard deviations to the mean recovery, $\bar{X}$. The IMVS program conducts these calculations via matrix algebra, where a weighted least-squares linear regression of S and SR versus $\bar{X}$ is conducted with weights chosen to be inversely proportional to the square of the mean recovery (see Reference 2, page 108 for details). This method is equivalent to that suggested by Britton [7] where the linear regressions for S and SR versus C are achieved by using the customary least squares procedure to fit the equations,

$$\frac{S}{C} = c + d\left(\frac{1}{C}\right) \tag{12}$$

In this study, however, the regression was conducted versus $\bar{X}$ as follows:

$$\frac{S}{\bar{X}} = c + d\left(\frac{1}{\bar{X}}\right) \tag{13}$$

which is then converted by multiplying through by $\bar{X}$ to yield the linear relationships

$$S = a\bar{X} + b \tag{14}$$

and

$$S_R = c\bar{X} + d \tag{15}$$

These equations are also presented in Tables 1-2.

If the intercepts (b) and (d) are negligible, then the slopes (a) and (c) are good approximations to the overall and single-analyst percent relative standard deviations, respectively. These, in turn, are measures of the method precision.

COMPARISON OF ACCURACY AND PRECISION ACROSS WATER TYPES

It is possible that the accuracy and precision of Method 601 depend upon the type of water being analyzed. The summary statistics $\bar{X}$, S, and SR are calculated separately for each concentration level within each water type. They can be compared across water types in order to obtain information about the effects of water type on accuracy and precision. However, the use of these summary statistics in this manner has several disadvantages. First, it is cumbersome since there are 36 mean recovery statistics ($\bar{X}$) (six ampuls x six waters), 36 precision statistics (S), and 18 precision statistics (SR) calculated for each compound. Comparison of these statistics across concentration levels and across water types becomes unwieldy. Second, the statistical properties of this type of comparison procedure are difficult to determine. Finally, due to variation associated with $\bar{X}$, S, and SR, comparisons based on these statistics can lead to inconsistent conclusions about the effect of water type. For example, distilled water may produce a significantly lower value than drinking water for the precision statistic S at a high concentration, but a significantly higher value for S at a low concentration.

An alternative approach, described in detail in Reference 2, has been developed to test for the effects of water type. This alternative approach is based on the concept of summarizing the average effect of water type across concentration levels rather than studying the local effects at each concentration level. If

significant differences are established by this alternative technique, then the summary statistics can be used for further local analysis.

The test for the effect of water type is based on the following statistical model. If X_{ijk} denotes the measurement reported by laboratory "i," for water type "j," and ampul "k," then

$$X_{ijk} = \beta_j \cdot C_k^{\gamma_j} \cdot L_i \cdot \varepsilon_{ijk} \qquad (1)$$

where $i = 1,2,\ldots, n$
$j = 1,2,\ldots, 6$
$k = 1,2,\ldots, 6$

Model components β_j and γ_j are fixed parameters that determine the effect of water type "j" on the behavior of the observed measurements (X_{ijk}). The parameter C_k is the true concentration level associated with ampul "k." The model component L_i is a random factor which accounts for the systematic error associated with laboratory "i." The model component ε_{ijk} is the random factor that accounts for the within-laboratory error.

The model is designed to approximate the global behavior of the data. The multiplicative structure was chosen because of two important properties. First, it allows for a possible curvilinear relationship between the data (X_{ijk}) and the true concentration level (C_k) through the use of the exponent γ_j on C_k. This makes the model more flexible in comparison to straight-line models. Second, as will be noted below, an inherent increasing relationship exists between the variability in the data and the concentration level C_k in this model. This property is important because it is typical of interlaboratory data collected under conditions where the true concentration levels vary widely.

Accuracy is related directly to the mean recovery or expected value of the measurements (X_{ijk}). The expected value for the data modeled by Equation 1 is

$$E(X_{ijk}) = \beta_j \cdot C_k^{\gamma_j} \cdot E(L_i \cdot \varepsilon_{ijk}) \qquad (16)$$

Precision is related to the variability in the measurements (X_{ijk}). The variance of the data modeled by Equation 1 is

$$Var(X_{ijk}) = \left[\beta_j \cdot C_k^{\gamma_j}\right]^2 Var(L_i \cdot \varepsilon_{ijk}), \qquad (17)$$

which is an increasing function of C_k. (See Reference 2 for a complete discussion of this model.)

The accuracy and precision of Method 601 depend upon water type through Equations 16 and 17 and the parameters β_j and γ_j. If β_j and γ_j vary with "j" (i.e., vary across water type), then the accuracy and precision of the method also vary across water type.

To determine if these parameters do vary across water type and to compare their values, they must be estimated from the laboratory data using regression techniques. Equation 1 represents the basic model. However, taking natural logarithms of both sides of Equation 1, the following straight line regression model is obtained.

$$\ell n\, X_{ijk} = \ell n\, \beta_j + \gamma_j\, \ell n\, C_k + \ell n\, L_i + \ell n\, \varepsilon_{ijk} \qquad (2)$$

The parameter $\ell n\, \beta_j$ is the intercept, and γ_j is the slope of the regression line associated with water type "j." It is assumed that $\ell n\, L_i$ is normally distributed with mean 0 and variance σ_L^2, that $\ell n\, \varepsilon_{ijk}$ is normally distributed with mean 0 and variance σ_ε^2, and that the $\ell n\, L_i$ and $\ell n\, \varepsilon_{ijk}$ terms are independent.

Based on Equation 2, the comparison of water types reduces to the comparison of straight lines. Distilled water is viewed as a control, and each of the remaining lines is compared directly to the line for distilled water.

Using the data on the log-log scale and regression techniques, the parameter $\ell n\ \beta_j$ (and hence β_j) and γ_j can be estimated. These estimates are then used to test the null hypothesis that there is no effect due to water type. The formal null and alternative hypothesis, H_O and H_A, respectively are given by:

$$H_O: \quad \ell n\ \beta_j - \ell n\ \beta_1 = 0 \text{ and } \gamma_j - \gamma_1 = 0 \text{ for } j = 2 \tag{18}$$

$$H_A: \quad \ell n\ \beta_j - \ell n\ \beta_1 \neq 0 \text{ and/or } \gamma_j - \gamma_1 \neq 0 \text{ for some } j = 2 \tag{19}$$

The null hypothesis (H_O) is tested against the alternative hypothesis (H_A) using an F-statistic. The probability of obtaining the value of an F-statistic as large as the value which was actually observed, Prob(F > F OBS), is calculated under the assumption that H_O is true. H_O is rejected in favor of H_A if Prob(F > F OBS) is less than 0.05.

If H_O is not rejected, then there is no evidence in the data that the β_j vary with "j" or that the γ_j vary with "j." Therefore, there is no evidence of an effect due to water type on the accuracy or precision of the method. If H_O is rejected, then some linear combination of the differences $(\ell n\ \beta_j - \ell n\ \beta)$ and $(\gamma_j - \gamma_1)$ is statistically different from zero. However, this does not guarantee there will be a statistically significant direct effect attributable to any specific water type since the overal F test can be overly sensitive to minor systematic effects common to several water types. The effect due to water type is judged to be statistically significant only if one of the differences, $(\ell n\ \beta_j - \ell n\ \beta_1)$ and/or $(\gamma_j - \gamma_1)$, is statistically different from zero. This is determined by checking the simultaneous 95% confidence intervals

which are constructed for each of these differences. Each true difference can be stated to lie within its respective confidence interval with 95% confidence. If zero is contained within the confidence interval, then there is no evidence that the corresponding difference is significantly different from zero.

If at least one of the confidence intervals for the differences $(\ell n\ \beta_j - \ell n\ \beta_1)$ or $(\gamma_j - \gamma_1)$ fails to include zero, then the statistical significance of the effect due to water type has been established. However, establishment of a statistically significant effect due to water type does not necessarily mean that the effect is of practical importance. Practical importance is related to the size and interpretation of the differences.

The interpretation of the differences involves comparing the mean recovery and standard deviation for each water type to the mean recovery and standard deviation obtained for distilled water. These comparisons are made on a relative basis. The mean recovery for water type "j," given by Equation 16, is compared to that for distilled water (j = 1) on a relative basis by

$$\frac{E(X_{ijk})}{E(X_{ilk})} = \frac{\beta_j\ C_k^{\gamma_j}\ E(L_i \cdot \varepsilon_{ijk})}{\beta_1\ C_k^{\gamma_1}\ E(L_i \cdot \varepsilon_{ilk})} = \frac{\beta_j}{\beta_1} C_k^{(\gamma_j - \gamma_1)} \qquad (20)$$

(The ratio of the standard deviations would be equivalent to Equation 20; therefore, the interpretation of the effect on precision is the same as that for the effect on mean recovery.)

The ratio in Equation 20 is a measure of the relative difference in mean recovery between water type "j" and distilled water. It is composed of two parts (a) β_j/β_1, which is independent of the true concentration level (i.e., the constant bias), and (b) $C_k^{(\gamma_j - \gamma_1)}$,

which depends on the true concentration level (i.e., the concentration dependent bias). If $(\gamma_j - \gamma_1)$ is zero, then the relative difference in mean recovery is β_j/β_1, which is independent of concentration level C_k. Then the mean recovery of water type "j" is β_j/β_1 x 100 percent of the mean recovery for distilled water. If $(\gamma_j - \gamma_1)$ is not zero, then the mean recovery of water type "j" is $([\beta_j/\beta_1] \cdot C_k^{[\gamma_j - \gamma_1]})$ x 100 percent of that for distilled water, and therefore depends on the true concentration level C_k.

To illustrate these points, consider the following example. Suppose that a significant F-value has been obtained, and the confidence intervals for all of the differences contain zero except for water type 5. For water type 5, the point estimate for $(\ell n\ \beta_5 - \ell n\ \beta_1)$ is -0.38, and the confidence interval for $(\ell n\ \beta_5 - \ell n\ \beta_1)$ is (-0.69, -0.07). The point estimate for $(\gamma_5 - \gamma_1)$ is -0.07, and the confidence interval for $(\gamma_5 - \gamma_1)$ is (-0.04, 0.18). In this case, a statistically significant effect due to water type has been established that involves only water type 5. The practical significance of this effect is judged by considering Equation 20. The ratio of mean recoveries for water type 5 and distilled water is given by

$$\frac{E(X_{i5k})}{E(X_{i1k})} = \frac{\beta_5}{\beta_1} C_k^{(\gamma_5 - \gamma_1)} \qquad (21)$$

and the ratio of the standard deviations is given by

$$\sqrt{\frac{Var(X_{ijk})}{Var(X_{i1k})}} = \frac{\beta_5}{\beta_1} C_k^{(\gamma_5 - \gamma_1)} \qquad (22)$$

Because the confidence interval for $(\gamma_5 - \gamma_1)$ contains zero, this difference is assumed to be insignificant and is set to zero.

Therefore, Equations 21 and 22 reduce to β_5/β_1. The point estimate for ($\ell n\ \beta_5 - \ell n\ \beta_1$) was -0.38. Therefore, the point estimate for β_5/β_1 is 0.68, and the mean recovery for water type 5 is estimated to be 68% of the mean recovery for distilled water. Similarly, the standard deviation for the data for water type 5 is estimated to be 68% of the standard deviation for distilled water. Since the 95% confidence interval for ($\ell n\ \beta_5 - \ell n\ \beta_1$) was (-0.69, -0.07), any value in the interval (0.50, 0.93) is a reasonable estimate for β_5/β_1, and the mean recovery (standard deviation) for water type 5 can be claimed to be from 50% to 93% of the mean recovery (standard deviation) for distilled water. The practical significance of the effect due to water type 5 would depend on the importance of a mean recovery (standard deviation) that is between 50% and 93% of the mean recovery (standard deviation) observed for distilled water.

The comparison of accuracy and precision across water types just discussed is based on the assumption that Equation 1 approximately models the data. It is clear that in practical monitoring programs of this type that such models cannot model the data completely in every case. This analysis therefore is viewed as a screening procedure which identifies those cases where differences in water types are likely to be present. A more detailed local analysis can then be pursued using the basic summary statistics for precision and accuracy.

For a complete discussion of the statistical model and the analyses associated with the test for the effect of water types, see pages A-1 through A-17 of Reference 2. Results of the accuracy and precision comparison among the waters in the study are presented in Appendix E.

SECTION 6

RESULTS AND DISCUSSION

The objective of this study was to characterize the performance of Method 601 in terms of accuracy, overall precision, single-analyst precision, and the effect of water type on accuracy and precision.

One measure of the performance of the method is that 17% of the 20,160 data points were rejected as outliers.

ACCURACY

The accuracy is obtained by comparing the mean recovery, $\bar{x}$, to the true values of concentration in µg/L. In Appendix E, individual values of accuracy as percent relative error are listed for each analyte, in each water matrix, and at each of the six concentration levels in that water matrix (three Youden pairs). This results in 1008 separate values for accuracy. The linear regression of mean recovery, $\bar{x}$, versus true concentration level, c, provides values representing the percent recovery over all the concentration levels. This reduces the separate values for accuracy to 168; one value for each of 28 analytes in each of six waters. Table 13 presents the percent recovery for each compound in water types as measured by the slopes of the linear regression equations for recovery presented earlier in Tables 1-2.

TABLE 13. PERCENT RECOVERY STATISTICS

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
1	Trichlorofluoromethane	89	92	96	96	92	96	94
	Chloromethane	77	91	99	94	81	70	85
	Vinyl chloride	97	106	112	113	108	114	108
	trans-1,2-Dichloroethene	97	98	103	102	100	103	101
	1,1,1-Trichloroethane	90	92	94	94	92	111	96
	Trichloroethene	132	140	146	135	141	140	139
	Dibromochloromethane	94	98	94	93	95	98	95
	Tetrachloroethene	94	96	97	85	96	96	94
	1,2-Dichlorobenzene	93	91	90	89	91	91	91
2	Bromomethane	76	103	91	79	82	69	83
	Chloroethane	99	108	111	101	110	109	107
	1,1-Dichloroethene	98	103	98	93	105	102	100
	Chloroform	93	90	95	90	95	95	93
	Carbon tetrachloride	98	100	95	92	95	102	97
	trans-1,3-Dichloropropene	74	69	75	72	85	78	76
	1,1,2-Trichloroethane	86	84	85	78	93	92	86
	Bromoform	96	102	103	91	97	101	98
	Chlorobenzene	100	100	98	93	93	104	98
	1,4-Dichlorobenzene	70	81	84	82	80	94	84

(continued)

TABLE 13 (continued)

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
3	Methylene chloride	91	97	99	100	98	95	97
	1,1-Dichloroethane	95	93	97	98	96	95	96
	1,2-Dichloroethane	104	103	101	86	97	39	88
	Bromodichloromethane	112	100	112	109	109	104	108
	1,2-Dichloropropane	102	98	91	87	104	110	99
	cis-1,3-Dichloropropene	59	60	56	61	50	53	56
	1,1,2,2-Tetrachloroethane	95	92	97	84 (93)	91	100	93
	1,3-Dichlorobenzene	95	91	98	94	92	93	94
	Average of all analytes	93	95	97	92	95	95	95

[a]From Tables 1 for accuracy.

The validity of using the slope to estimate the percent recovery depends upon a negligible magnitude for the intercept of the linear regression equation. An examination of the regression equations shows five instances where the intercept for the mean recovery exceeds the value of 5: Intercept 50 for 1,2-dichloroethane in wastewater 3; Intercept 16.3 for 1,2-dichloroethane in wastewater 1; Intercept 10.0 for chlorobenzene in wastewater 1; Intercept 7.1 for 1,1,2,2-tetrachloroethane in wastewater 1; and Intercept 6.4 for chloromethane in wastewater 3.

An examination of the statistical summaries of 1,2 dichloroethane indicates very high recoveries of the lowest Youden pairs (wastewater 3; 666% and 561%: wastwater 1; 263% and 156%). These large values can be attributed to the high background levels (wastewater 3; avg. of 636 ppb: wastewater 1; avg. of 147 ppb) which contribute to the wide variability of the percent recovery when the measured values are corrected for the blank values. If the two lowest concentrations was excluded from the calculations because the lowest Youden pair concentration was too low in comparison to the background the average recoveries for wastewaters 3 and 1 would be 95% and 98% respectively. See revised equations in Table 2.

An examination of the blank values for chlorobenzene in wastewaters 1 indicates an extremely high background of 1823 ppb. This high background affected analyses of all the Youden pairs. (low Youden pair 1275% and 1502%; middle Youden pair 212% and 252%; high Youden pair 88% and 67%) An examination of the other waters at all concentrations indicates that wastewater 1 produced unreasonable results; hence the regression equations are invalid.

The background level of 1,1,2,2-tetrachloroethane in wastewater 1 averaged 110 ppb. The percent recoveries of the lowest Youden

pair (8 and 10 ppb) were 233% and 81%. Deleting the lowest Youden pair from the calculations because the background was too high yielded an average recovery of 91%.

The background level of chloromethane is wastewater 3 was low with an average of only 17 ppb. The percent recoveries from the bias of the statistical summaries for the six concentrations were 129%; 167%; 63%; 76%; 75% and 84%. The large variation in recoveries are probably due to the handling problems associated with a gas. The handling problems are also evident in the poor precision seen in the regression equations.

Inspecting the average percent recoveries for each compound across all water types is another means of interpreting the data. Low recoveries were noted for chloromethane; bromomethane; *cis* and *trans* 1,3-dichloropropene; 1,2-dichloroethane; 1,1,2-trichloroethane and 1,4-dichlorobenzene. High recoveries were noted for trichloroethane.

The low recoveries for chloromethane across all water types indicate a problem with the handling of the sample since the compound is a gas and readily volatilizes.

Bromomethane also a gas has another facet to consider. Analyses of the ampuls after completion of the method study indicated that degradation had occurred and therefore the regression equations are not suggested for use. This problem als occurred in the quality control samples which are made available to the public through the QAB of EMSL-Cincinnati.

Stability problems for both *cis* and *trans* 1,3-dichloropropene were also discovered by analyzing the ampuls after the method study was completed. Therefore the equations are not recommended for use.

The 88% mean recovery for 1,2-dichloroethane from all waters include the original recovery values for both wastewaters 1 and 3. Calculations of percent recovery across all waters using the new revised equations resulted in an average of 99.7%.

Examining bias in the statistical summaries for 1,1,2-trichloroethane in all waters and concentration levels indicates a close comparison with the average percent recovery of 86%. This recovery also compares closely with those reported in Method 602 which were 91% and 75% for trichloroethane and its isomer 1,1,1-trichloroethane respectively. Therefore the method study value of 86% appears reasonable.

The high Youden pair true value for 1,4 dichlorobenzene appears to be in error since the recoveries for the highest concentration averaged approximately 65% in comparison to 95% for the other concentrations. Stability of the ampuls were confirmed by both MC and QAB. MC data indicated no change from time zero to time six months. However an error in production of the standard solution could have occurred which could yield only meaningful values for stability but not for accuracy. The QAB analytical data at the end of the study agreed with the true values of the low and middle Youden pairs yet had an analytical value of 66% for the true value for the highest Youden pair. Since the highest concentrations could not be verified and a reasonable value could not be substituted the revised equations were based on the low and middle Youden pairs only.

An examination of the bias in the statistical summaries of trichloroethene also indicates an apparent error in the middle Youden pair by a factor of two which is probably due to a dilution error during production. Analyses by MC showed no change in the ampul concentration from time zero to time six months. Analyses by QAB at a later date indicated degradation because only 2% of the true value was found. The low QAB value is not

considered meaningful because trichloroethene easily decomposes when exposed to light and moisture. Revising the regression equations by changing the middle Youden pair true value by a factor of two yielded an average of 92%.

PRECISION

Similarly, the overall and single-analyst precisions were determined as %RSD's for each analyte, water type, and concentration level. As presented in Appendix D, 1008 individual values of overall %RSD and 504 individual values of %RSD-SA result. The linear regression of standard deviation, S, versus mean recovery, X, provides values of %RSD over all the concentration ranges. This reduces the separate measures of precision to 168; one value for each of 28 analytes in each of six water-types. Tables 14 and 15 present the %RSD as measured by the slopes of the linear regression equations presented earlier in Tables 1-2 for the overall and the single-analyst precision, respectively.

In Table 14, the overall %RSD's are entered for the analytes in the six water matrices. The average %RSD for each analyte in all six waters is entered in the column on the far right, while the average value for all analytes in each water is entered in the bottom row. Further investigations indicated poorer precision (higher values of %RSD) were obtained for chloromethane (50), *trans*-1,3-dichloropropene (45), *cis*-1,3-dichloropropene (40), and bromomethane (42). No other average values of %RSD exceeded 30. The average %RSD for all analytes in each of the water matrices was quite constant, varying between 24 to 29%.

Again the validity of the %RSD and %RSD-SA as obtained from the slopes of the linear regression equations depends on a negligible value for the intercept. The probable reasons for the poor precisions are stability and background as previously explained under the section of accuracy. Another source of variation is that two

TABLE 14. OVERALL PERCENT RELATIVE STANDARD DEVIATIONS

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
1	Trichlorofluoromethane	26	30	25	31	28	29	28
	Chloromethane	52	49	55	49	58	38	50
	Vinyl chloride	27	32	33	22	37	21	29
	trans-1,2-Dichloroethene	17	24	21	23	15	28	21
	1,1,1-Trichloroethane	20	27	23	30	22	37	27
	Trichloroethene	23	32	37	27	25	28	29
	Dibromochloromethane	24	23	22	14	25	26	22
	Tetrachloroethene	18	25	22	35	26	26	25
	1,2-Dichlorobenzene	13	17	19	19	18	17	17
2	Bromomethane	36	65	45	40	40	26	42
	Chloroethane	17	19	22	9	23	29	20
	1,1-Dichloroethene	29	31	21	28	32	20	27
	Chloroform	19	9	20	18	17	19	17
	Carbon tetrachloride	20	20	20	23	21	22	21
	trans-1,3-Dichloropropene	40	39	39	64	37	51	45
	1,1,2-Trichloroethane	19	19	22	24	19	22	21
	Bromoform	21	24	20	21	22	22	22
	Chlorobenzene	18	16	18	33	21	36	24
	1,4-Dichlorobenzene	28	20	23	27	30	37	28

(continued)

TABLE 14 (continued)

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
3	Methylene chloride	21	17	14	18	20	19	18
	1,1-Dichloroethane	14	18	14	16	16	16	16
	1,2-Dichloroethane	15	18	18	28	18	71	28
	Bromodichloromethane	20	18	17	21	22	24	20
	1,2-Dichloropropane	28	27	21	30	30	33	28
	cis-1,3-Dichloropropene	38	34	49	46	37	36	40
	1,1,2,2-Tetrachloroethane	23	20	26	44	30	28	29
	1,3-Dichlorobenzene	26	24	23	29	20	23	24
	Average of all analytes	24	26	26	28	26	29	27

[a]From Table 1 for overall precision.

TABLE 15. SINGLE-ANALYST PERCENT RELATIVE STANDARD DEVIATIONS

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
1	Trichlorofluoromethane	15	22	15	18	14	16	17
	Chloromethane	28	28	24	22	13	19	22
	Vinyl chloride	13	14	16	12	12	9	13
	trans-1,2-Dichloroethene	11	16	12	13	10	14	13
	1,1,1-Trichloroethane	15	14	14	15	10	18	14
	Trichloroethene	13	13	13	10	16	15	13
	Dibromochloromethane	11	10	11	5	10	12	10
	Tetrachloroethene	14	17	13	22	18	13	16
	1,2-Dichlorobenzene	10	12	9	14	13	10	11
2	Bromomethane	28	24	23	11	13	12	19
	Chloroethane	14	7	18	8	7	10	11
	1,1-Dichloroethene	21	12	10	19	7	14	14
	Chloroform	13	5	12	13	10	7	10
	Carbon tetrachloride	15	10	13	10	9	10	11
	trans-1,3-Dichloropropene	15	14	17	28	11	20	18
	1,1,2-Trichloroethane	13	6	12	17	9	8	11
	Bromoform	12	10	17	18	8	17	14
	Chlorobenzene	15	7	12	14	12	18	13
	1,4-Dichlorobenzene	14	16	9	17	11	16	14

(continued)

TABLE 15 (continued)

Mix number	Compound	Slope of regression equation[a]						
		Distilled water	Tap water	Surface water	Wastewater 1	Wastewater 2	Wastewater 3	Average of all waters
3	Methylene chloride	11	8	8	9	12	14	10
	1,1-Dichloroethane	9	9	6	13	13	12	10
	1,2-Dichloroethane	11	6	8	18	10	25	13
	Bromodichloromethane	11	13	9	10	9	12	11
	1,2-Dichloropropane	18	19	12	17	20	21	18
	cis-1,3-Dichloropropene	11	17	23	19	20	18	18
	1,1,2,2-Tetrachloroethane	14	9	11	19	16	15	14
	1,3-Dichlorobenzene	14	15	15	21	14	13	15
	Average of all analytes	14	13	13	15	12	14	14

[a]From Table 1 single-analyst precision for accuracy.

labs (8 and 9) heated the column past the manufacturer's recommended maximum temperature which results in a loss of liquid phase and change of retention times related to the other laboratories. Also three laboratories used premixed standard solutions which are not recommended due to instability of the gaseous standards over time.

The values for %RSD-SA presented in Table 15 indicated the expected improvement in intralaboratory precision over that of the interlaboratory precision as given in Table 14. The analytes giving the poorest average precision over all six waters were, again, chloromethane (22), bromomethane (19), *cis*-1,2-dichloropropene (18), and *trans*-1,2-dichloropropene (18) along with 1,2-dichloropropane (18). The average %RSD-SA values for all compounds in each water were very constant, ranging from 12 to 15%.

EFFECTS OF WATER TYPES

The comparison of accuracy and precision across water types is ...zed in Table 16 where the observed F values and the ...y of exceeding the F values are entered for each of ...alytes in each of the six water matrices. For 12 of ...arbons, the F-test suggests a statistically significant due to water type [P(F > observed F) ≤0.05].

Although statistical significance is indicated by the F-test, the null hypothesis test indicates that a practical effect due to water type is established for only four of the analytes: carbon tetrachloride in wastewater 1; chlorobenzene in wastewater 1; 1,4-dichlorobenzene in wastewater 3; and 1,2-dichloroethane in tap water, surface water and wastewater 3. The practical significance of water type on accuracy and precision was calculated using the null hypothesis approach that zero is not contained within the four compounds in the specific waters (see Tables presented in Appendix E.

TABLE 16. SUMMARY OF THE TESTS FOR DIFFERENCE ACROSS WATER TYPES

Mix number	Compound	F-test statistically significant at the 5% level?	Statistical significance established by the 95% confidence limit?	Practical significance established by the 95% confidence limit?	Waters
1	Trichlorofluoromethane	No	-	-	
	Chloromethane	No	-		
	Vinyl chloride	No	-		
	trans-1,2-Dichloroethene	No	-		
	1,1,1-Trichloroethane	Yes	-		
	Trichloroethene	No	-		
	Dibromochloromethane	Yes	-		
	Tetrachloroethene	Yes	-		
	1,2-Dichlorobenzene	Yes	-		
2	Bromomethane	No	-		
	Chloroethane	No	-		
	1,1-Dichloroethene	No	-		
	Chloroform	No	-		
	Carbon tetrachloride	Yes	Yes	Yes	4
	trans-1,3-Dichloropropene	Yes	-		
	1,1,2-Trichloroethane	Yes	-		
	Bromoform	No	-		
	Chlorobenzene	Yes	Yes	Yes	4
	1,4-Dichlorobenzene	Yes	Yes	Yes	6
3	Methylene chloride	Yes	-		
	1,1-Dichloroethane	Yes	-		
	1,2-Dichloroethane	Yes	Yes	Yes	6
	Bromodichloromethane	No	-		
	1,2-Dichloropropane	No	-		
	cis-1,3-Dichloropropene	No	-		
	1,1,2,2-Tetrachloroethane	No	-		
	1,3-Dichlorobenzene	No	-		

In the case of carbon tetrachloride the regression equations for water 4 indicated at least 10% lower than any other water. The primary reason for this is the low recoveries of the low Youden pairs (65-70%). In the cases of chlorobenzene in wastewater 1 and 1,2-dichloroethane in wastewater 3 the effect of water type is most likely attributed to the high background concentrations of these analytes in the specific water matrix (e.g., an average of 1717 µg/L chlorobenzene in wastewater 1, and an average of 636 µg/L 1,2-dichloroethane in wastewater 3). The resultant high blank corrections would contribute to a wide variability in accuracy and precision among the 20 laboratories, especially for the low and medium Youden pair concentration levels. This problem is graphically illustrated in Table 68 where the mean recovery of chlorobenzene in ampul 1 (wastewater 1) is 150.25 µg/L compared to a "true value" of 10.00 µg/L. A similar effect as noted in Table 72 where the mean recoveries of 1,2-dichloroethane in ampuls 1 and 2 (wastewater 3) are 53.23 µg/L and 56.08 µg/L compared to true values of 8.00 and 10.00 µg/L, respectively. Examination of 1,4 dichlorobenzene data indicated an overall high recovery at all concentrations which indicates a practical significance.

The above rationale does not, however, account for the practical effect of 1,2-dichloroethane in tap and surface waters. In these cases the background levels of the analytes in the specific waters were low. Further investigations of data show no practical significance.

RESPONSE TO QUESTIONNAIRE

A questionnaire was provided to the 20 participating laboratories. Ten laboratories completed the questionnaire. Table 17 summarizes the analytical conditions employed by the responding laboratories. Of the respondents, four used a Tracor Model 560 gas chromatograph while the other six use various models of Varian, Perkin-Elmer,

TABLE 17. LABORATORY ANALYTICAL CONDITIONS

Laboratory code	Gas chromatograph	Temperature program min, °C	Carrier gas/flowrate, mL/min	Column packing
1	Tracor 560	45°(3 min), 8°/min to 225°, hold 15 min	He-40	1% SP-1000 on 60/80 mesh Carbopack B
3[a]	Tracor	-	-	-
4	Varian 3740	45°(3 min), 8°/min to 220°, hold 15 min	He-40	1% SP-1000 on 60/80 mesh Carbopack B SP-2100 precolumn
5	Perkin-Elmer Sigma I	45°(3 min), 8°/min to 220°	He-60	1% SP-1000 on 60/80 mesh Carbopack B 3% SP-1000 precolumn
6	Hewlett-Packard 5750	55°(3 min), 8°/min to 220°, hold 17 min	He-40	1% SP-1000 on 60/80 mesh Carbopack B
7	Tracor 560	45°(3 min), 8°/min to 220°	He-40	1% SP-1000 on 60/80 mesh Carbopack B
8	Varian 3700	45°(3 min), 8°/min to 250°, hold 7 min	He-40	1% SP-1000 on 60/80 mesh Carbopack B

(continued)

TABLE 17 (continued)

Laboratory code	Gas chromatograph	Temperature program min, °C	Carrier gas/flowrate, mL/min	Column packing
9[a]	Perkin-Elmer 3920	-	He	-
10[a]	--	-	-	-
11	Tracor 560	45°(3 min), 8°/min to 220°, hold 25 min	He-30	1% SP-1000 on 60/80 mesh Carbopack B
14	Tracor 560	45°(3 min), 8°/min to 220°	He-56	1% SP-1000 on 60/80 mesh Carbopack B
17[a]	Hewlett-Packard 5840	-	-	-
18	Micro Tek MT-220	45°(3 min), 7.5°/min to 220°, hold	He-40	1% SP-1000 on 60/80 mesh Carbopack B
19	Hewlett-Packard 5730-A	45°(4 min), 250°(32 min)	He-40	1% SP-1000 on 60/80 mesh Carbopack B
20[a]	Tracor MT-220	-	-	-

(continued)

TABLE 17 (continued)

Laboratory code	Gas chromatograph	Column size	Detector model	H_2 flow, mL/min	Furnace temperature °C	Electrolyte/ flowrate, mL/min
1	Tracor 560	8 ft	Hall 700A	25	850	Methanol-0.65
3[a]	Tracor	-	Hall 700A	-	-	-
4	Varian 3740	8' x 2 mm.	Hall 700A	60	810	n-Propanol-0.8
5	Perkin-Elmer Sigma I	8' x 2 mm. glass	Coulson 451 (WSA)	20	820	100% water
6	Hewlett-Packard 5750	8' x 1/8" stainless steel	Hall 700A	30	875	n-Propanol-0.6
7	Tracor 560	8' x 1/10" glass	Hall 700A	50	825	n-Propanol-0.5
8	Varian 3700	8' x 2 mm glass	Hall 700A	30	800	n-Propanol-1.0

(continued)

TABLE 17 (continued)

Laboratory code	Gas chromatograph	Column size	Detector model	H_2 flow, mL/min	Furnace temperature °C	Electrolyte/ flowrate, mL/min
9[a]	Perkin-Elmer 3920	-	-	-	-	-
10[a]	--	-	-	-	-	-
11	Tracor 560	-	Hall 700A	60	900	n-Propanol-1.0
14	Tracor 560	8' x 2 mm glass	Hall 700A	20	820	n-Propanol-0.35
17[a]	Hewlett-Packard 5840	-	-	-	-	-
18	Micro Tek MT-220	8' glass	Coulson	20	800	P/N AG501-X8, 20/50 mesh
19	Hewlett-Packard 5730-A	-	Hall 700A	30	1,000	n-Propanol-0.5
20[a]	Tracor MT-220	-	-	-	-	-

(continued)

TABLE 17 (continued)

Laboratory code	Gas chromatograph	Purge/trap instrument	Mode	Purge/desorb/ bake cycle, min	Trap material
1	Tracor 560	Tekmar LSC-2	Manual	11-4-7	Tenax/silica gel/ charcoal
2[a]	Tracor	Tekmar LSC-2	-	-	-
3	Varian 3740	Tekmar LSC-1	Manual	11-4-7+	Tenax/silica gel/ charcoal
5	Perkin-Elmer Sigma I	CDS 310	Automatic	11-purge 7-burn at 180°	Tenax/silica gel/ charcoal
6	Hewlett-Packard 5750	Tekmar LSC-2	Automatic	11-7-4	Tenax/charcoal 50/50
7	Tracor 560	Tekmar LSC-2	Automatic	11-4-20	Tenax/silica gel/ 3% OV-1
8	Varian 3700	Homemade	Manual	11-4-variable	Silicone/Tenax/ silica gel/ charcoal

(continued)

TABLE 17 (continued)

Laboratory code	Gas chromatograph	Purge/trap instrument	Mode	Purge/desorb/ bake cycle, min	Trap material
9[a]	Perkin-Elmer 3920	Homemade	-	-	Tenax/OV-1/silica gel/charcoal
10[a]	--	Tekmar	-	-	-
[illegible]	[illegible]	[illegible]	[illegible]	12-3-30	Tenax/3% OV-1/ silica gel/ charcoal
14	Tracor 560	Homemade	Manual	11-4-7	Tenax/3% OV-1/ silica gel/ charcoal
17[a]	Hewlett-Packard 5840	Tekmar LSC-2	-	-	-
18	Micro Tek MT-220	Tekmar LSC-1	Manual	12-4-10	Tenax/silica gel/ charcoal
19	Hewlett-Packard 5730-A	Tekmar LSC-2	-	12-5-45	Tenax/silica gel/ charcoal
20[a]	Tracor MT-220	Tekmar LSC-2	Automatic	-	-

[a]Responses to questionnaire not received from these laboratories. Information supplied in table was obtained from original proposals from the laboratories.

Hewlett-Packard and Microtech gas chromatographs. In every case helium was used as a carrier gas with flows from 30 to 60 mL/min (the majority employing a flow of ~40 mL/min). In every case an 8 foot Carbopack B 60/80 mesh column coated with 1% SP-1000 was used. One laboratory reported using a 4 cm, SP-2100 precolumn. In most case the temperature programming on the column was held three or four minutes at 45°C (one laboratory, 55°), followed by an 8°C/min temperature program (one laboratory, 7.5°C/minute), to a final temperature of from 220°C (six laboratories) to 250°C (one laboratory). This final temperature was held constant from periods of 7 to 32 minutes to assure elution of all the purgeable halocarbons. The laboratory which used 250°C as the final temperature exceeded the maximum recommended temperature for the column. This results in a lost of liquid phase and changes the retention times.

Eight of the ten respondents employed the Tracor 700A Hall Detector, while two used a Coulson Detector. The hydrogen gas flow rate employed ranged from 20 to 60 mL/minute with furnace temperatures ranging from 800°C to 1000°C. n-Propanol was the electrolyte used in seven laboratories; others used methanol or water. The electrolyte flows ranged from 0.35 mL/minute to 1 mL/minute.

Six of the ten laboratories used Tekmar Purge/Trap Systems (three used Model KSC-1, manual). Another laboratory used a CDS Model 310 automatic concentrator, while the other three laboratories employed instruments designed and fabricated in their laboratories. Purge times ranged from 11 to 12 minutes; desorb times from 3 to 7 minutes; and bake times from 4 to 45 minutes. In all cases but one, helium was used as the carried gas primarily at a 40 mL/min flow rate. In one case a 40 mL/min N_2 flow was used as the carrier gas.

The trap materials employed should have consisted of four materials: 3% OV-1 on 60/80 mesh Chromsorb W; Tenax®-GC porous polymer, silica gel, and cocoanut charcoal. As described in the method two traps are acceptable. However lab 6 used a different trap which is incapable of valid data for those compounds which elute prior to methylene chloride. The data from lab 6 was rejected by the IMVS program as outliers for those compounds. Four cases were reported where longer bake times were needed due to concern of carry over from high concentrations samples. Installation of the trap in a backwards manner can cause this type of problem.

Most laboratories prepared their gaseous standard using gravimetric techniques (e.g., injecting gas into tared volumetric flask, reweighing and diluting to mark). One laboratory bubbled gas through methanol and determined standard concentration gravimetrically. Three laboratories purchased premixed standards. Premixed standards containing gases are not recommended due to stability problems with the gases.

Comments on incidences of inability to detect low-chlorinated volatile concentrations included the following:

- Interference peaks - high background of *trans*-1,3-dichloropropene in wastewaters R and T, and of chlorobenzene in wastewater T interferred with the ability to measure low-level spikes into these wastewaters (two comments).

- Poor detector sensitivity - three of the ten laboratories that responded reported difficulties with detector sensitivity. One laboratory sited the following compounds; 2-chloroethylvinyl ether, chloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, *trans*-1,2-dichloroethene, tetrachloroethene,

and trichloroethene. Two other laboratories reported sensitivity problems with bromoform, bromomethane, dichlorofluoromethane, and vinyl chloride. Seven laboratories reported no problems with sensitivity.

- Analyte not released from trap - one laboratory felt that 1,1-dichloroethene, chlorobenzene, and the dichlorobenzenes did not trap well. Another questioned the purge/trap efficiencies of the dichlorobenzenes.

- Baseline noise - no laboratories experienced baseline noise problems.

- Initial concentrations too low - no laboratories reported specific problems with low initial concentrations.

- Other comments - one laboratory felt that some compounds were lost in the purge/trap cycle but didn't specify which ones. Two laboratories had difficulties in eluting the dichlorobenzenes, one feeling that the final column temperature employed (220°C) was not sufficient to get sharp peaks, while the other did not elute these compounds at 250°C (held 32 minutes).

Responses to other questions concerning the Method 601 analysis are summarized as follows:

Linearity of detector response - eight of the ten responses had comments on the linearity of detector response. Generally, the response was not linear over concentrations of 200 µg/L. Two other laboratories observed a diminished response for lower concentration standards (5-15 ppb). One laboratory sited nonlinear behavior for bromoform, chloromethane, dibromochloromethane and dichlorobromomethane below 50 ppb.

Another laboratory noted a decrease in linearity with an increase in bromine content. In some cases, the high concentration spikes resulted in overload of the gas chromatographic integrator. One laboratory diluted all high concentration spikes before final analysis to overcome this problem.

Calibration method - several calibration methods were employed by the ten respondents including: (1) two-point calibration with bracketing standards; (2) external standards at three concentration levels and blank; (3) external standards using closest standard to concentration (three laboratories); (4) linear least squares calibration; (5) seven to eight point standard curve initially, with one point confirmation using standard near concentration; (6) average response factor of at least five calibration points; and (7) calibration factor from digital integrator.

Day-to-day detection sensitivity variability - eight laboratories reported no problem with variations in detection sensitivity. One laboratory which noted problems felt the variation was due to slight changes in flow rate. Another laboratory suspected that variations in laboratory ambient temperature could be affecting performance of the conductivity cell.

Problem compounds - The isomers of 1,3-dichloropropene were found to be unstable after completion of the study by QAB. This instability is verified by the regression equations which show overall low recoveries and poor precision. An impurity or breakdown product of 1,2-dichloropropane was found during analyses by both QAB and one of the participating laboratories.

The gas bromomethane is suspect to stability. The interpretation of the mean recovery generally low is hampered by the large standard deviation. However, past history of quality control samples also indicated instability of bromomethane. Gases are difficult to handle and the accuracy and precision regression equations show this by poor recoveries and poor precision.

Water type problems - several comments were centered on the high halocarbon backgrounds in the wastewaters that resulted in cross-contamination and column deterioration. This was particularly true of wastewaters 1 and 3, but one laboratory had difficulty only with wastewater 2, citing interference to detection of low-level concentrations. The high level of 1,2-dichloropropane in wastewater 3 caused co-elution of this compound with cis-1,3-dichloropropene in one laboratory. One laboratory observed late eluting peaks in wastewater 1, and a variable concentration of methylene chloride in wastewater 3. Several laboratories received water samples especially 3, with cracked caps. Two of the ten laboratories reported no problems with wastewaters.

Miscellaneous comments - one laboratory experienced problems due to CH_2Cl_2 and $CHCl_3$ vapors in the ambient laboratory air causing contamination, and had to move to a "cleaner" room. One laboratory had to dilute solutions involving the high concentration spikes in order to quantitate. Another laboratory stated that retention times indicated that mix 1 contained 1,3-dichlorobenzene rather than 1,2-dichlorobenzene.

The participating laboratories were asked for any recommendations which might improve Method 601. Of the ten responses, seven had suggestions as follows:

- Consider alternative methods of handling highly contaminated samples (waters). Two laboratories critiqued the study (not the method) by suggesting lower background levels in the wastewaters, and decreasing either the number of samples/ injections or the total Method 601 run time.

- Tedious sample preparation and handling is a problem. The method itself is not a problem.

- In preparation of standards, specify that enough neat compound be added to result in a mass change greater than 10 mg. This will permit three significant figures to be used in later calculations.

- To alleviate carryover problems from the purge/trap cycle: (1) use disposable sample purger; or (2) use several purgers and selector valves. This would permit removal of contaminated purging volumes for cleaning during chromatographic cycle.

- Specify the analytical ranges of the halocarbons using the Hall detector. In some cases one laboratory was at the upper limit for detector at the 10x setting.

- Specify that ambient air concentrations of organic solvents must the minimized.

- Two laboratories recommended that the dichlorobenzenes be omitted from Method 601. The feeling here is that Method 602 has much better efficiency (extraction) for the dichlorobenzenes and that the omission of these compounds would shorten the chromatographic run time in Method 601.

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APPENDIX A

TEST METHOD: PURGEABLE HALOCARBONS - METHOD 601

United States
Environmental Protection
Agency

Environmental Monitoring and
Support Laboratory
Cincinnati OH 45268

Research and Development EPA 600/4-82-057 July 1982

EPA

Test Method

Purgeable Halocarbons—Method 601

1. Scope and Application

1.1 This method covers the determination of 29 purgeable halocarbons. The following parameters may be determined by this method:

Parameter	STORET No.	CAS No.
Bromodichloromethane	32101	75-27-4
Bromoform	32104	75-25-2
Bromomethane	34413	74-83-9
Carbon tetrachloride	32102	56-23-5
Chlorobenzene	34301	108-90-7
Chloroethane	34311	75-00-3
2-Chloroethylvinyl ether	34576	110-75-8
Chloroform	32106	67-66-3
Chloromethane	34418	74-87-3
Dibromochloromethane	32105	124-48-1
1,2-Dichlorobenzene	34536	95-50-1
1,3-Dichlorobenzene	34566	541-73-1
1,4-Dichlorobenzene	34571	106-46-7
Dichlorodifluoromethane	34668	75-71-8
1,1-Dichloroethane	34496	75-34-3
1,2-Dichloroethane	34531	107-06-2
1,1-Dichloroethene	34501	75-35-4
trans-1,2-Dichloroethene	34546	156-60-5
1,2-Dichloropropane	34541	78-87-5
cis-1,3-Dichloropropene	34704	10061-01-5
trans-1,3-Dichloropropene	34699	10061-02-6
Methylene chloride	34423	75-09-2
1,1,2,2-Tetrachloroethane	34516	79-34-5
Tetrachloroethene	34475	127-18-4
1,1,1-Trichloroethane	34506	71-55-6
1,1,2-Trichloroethane	34511	79-00-5
Trichloroethene	39180	79-01-6
Trichlorofluoromethane	34488	75-69-4
Vinyl chloride	39175	75-01-4

1.2 This is a purge and trap gas chromatographic method applicable to the determination of the compounds listed above in municipal and industrial discharges as provided under 40 CFR

1.3 1. When this method is used to analyze unfamiliar samples for any or all of the compounds above, compound identification should be supported by at least one additional qualitative

technique. This method describes analytical conditions for a second gas chromatographic column that can be used to confirm measurements made with the primary column. Method 624 provides gas chromatograph/mass spectrometer (GC/MS) conditions appropriate for the qualitative and quantitative confirmation of results for most of the parameters listed above.

1.3 The method detection limit (MDL, defined in Section 12.1)[1] for each parameter is listed in Table 1. The MDL for a specific wastewater may differ from those listed, depending upon the nature of interferences in the sample matrix.

1.4 Any modification of this method, beyond those expressly permitted, shall be considered as major modifications subject to application and approval of alternate test procedures under 40 CFR 136.4 and 136.5.

1.5 This method is restricted to use by or under the supervision of analysts experienced in the operation of a purge and trap system and a gas chromatograph and in the interpretation of chromatograms. Each analyst must demonstrate the ability to generate acceptable results with this method using the procedure described in Section 8.2.

2. Summary of Method

2.1 An inert gas is bubbled through a 5-mL water sample contained in a specially-designed purging chamber at ambient temperature. The halocarbons are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent trap where the halocarbons are trapped. After purging is completed, the trap is heated and backflushed with the inert gas to desorb the halocarbons onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the halocarbons which are then detected with a halide-specific detector.[2,3]

2.2 The method provides an optional gas chromatographic column that may be helpful in resolving the compounds of interest from interferences that may occur.

3. Interferences

3.1 Impurities in the purge gas and organic compounds out-gassing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from contamination under the conditions of the analysis by running laboratory reagent blanks as described in Section 8.5. The use of non-TFE plastic tubing, non-TFE thread sealants, or flow controllers with rubber components in the purging device should be avoided.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly fluorocarbons and methylene chloride) through the septum seal into the sample during shipment and storage. A field reagent blank prepared from reagent water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Contamination by carry-over can occur whenever high level and low level samples are sequentially analyzed. To reduce carry-over, the purging device and sample syringe must be rinsed with reagent water between sample analyses. Whenever an unusually concentrated sample is encountered, it should be followed by an analysis of reagent water to check for cross contamination. For samples containing large amounts of water-soluble materials, suspended solids, high boiling compounds or high organohalide levels, it may be necessary to wash out the purging device with a detergent solution, rinse it with distilled water, and then dry it in a 105 °C oven between analyses. The trap and other parts of the system are also subject to contamination; therefore, frequent bakeout and purging of the entire system may be required.

4. Safety

4.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. The laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of material data handling sheets should also be made available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available and have been identified[4-6] for the information of the analyst.

4.2 The following parameters covered by this method have been tentatively classified as known or suspected, human or mammalian carcinogens: carbon tetrachloride, chloroform, 1,4-dichlorobenzene, and vinyl chloride. Primary standards of these toxic compounds should be prepared in a hood. A NIOSH/MESA approved toxic gas respirator should be worn when the analyst handles high concentrations of these toxic compounds.

5. Apparatus and Materials

5.1 Sampling equipment, for discrete sampling.

5.1.1 Vial—25-mL capacity or larger, equipped with a screw cap with hole in center (Pierce #13075 or equivalent). Detergent wash, rinse cap with tap and distilled water, and dry at 105 °C before use.

5.1.2 Septum—Teflon-faced silicone (Pierce #12722 or equivalent). Detergent wash, rinse with tap and distilled water, and dry at 105 °C for one hour before use.

5.2 Purge and trap device—The purge and trap device consists of three separate pieces of equipment: the sample purger, trap, and the desorber. Several complete devices are now commercially available.

5.2.1 The sample purger must be designed to accept 5-mL samples with a water column at least 3 cm deep. The gaseous head space between the water column and the trap must have a total volume of less than 15-mL. The purge gas must pass through the water column as finely divided bubbles with a diameter of less than 3 mm at the origin. The purge gas must be introduced no more than 5 mm from the base of the water column. The sample purger, illustrated in Figure 1, meets these design criteria.

5.2.2 The trap must be at least 25 cm long and have an inside diameter of at least 0.105 inch. The trap must be packed to contain the following minimum lengths of adsorbents: 1.0 cm of methyl silicone coated backing (Section 6.3.3), 7.7 cm of 2,6-diphenylene oxide polymer (Section 6.3.2), 7.7 cm of silica gel, 7.7 gm of coconut charcoal (Section 6.3.1). If it is not necessary to analyze for dichlorodifluoromethane, the charcoal can be eliminated, and the polymer section lengthened to 15 cm. The minimum specifications for the trap are illustrated in Figure 2.

5.2.3 The desorber must be capable of rapidly heating the trap to 180 °C. The polymer section of the trap should

not be heated higher than 180 °C and the remaining sections should not exceed 220 °C. The desorber design, illustrated in Figure 2, meets these criteria.

5.2.4 The purge and trap device may be assembled as a separate unit or be coupled to a gas chromatograph as illustrated in Figures 3 and 4.

5.3 Gas chromatograph—An analytical system complete with a temperature programmable gas chromatograph suitable for on-column injection and all required accessories including syringes, analytical columns, gases, detector, and strip-chart recorder. A data system is recommended for measuring peak areas.

5.3.1 Column 1—8 ft long × 0.1 in ID stainless steel or glass, packed with 1% SP-1000 on Carbopack B (60/80 mesh) or equivalent. This column was used to develop the method performance statements in Section 12. Guidelines for the use of alternate column packings are provided in Section 10.1.

5.3.2 Column 2—6 ft long × 0.1 in ID stainless steel or glass, packed with chemically bonded n-octane on Porasil-C (100/120) mesh or equivalent.

5.3.3 Detector—Electrolytic conductivity or microcoulometric. These types of detectors have proven effective in the analysis of wastewaters for the parameters listed in the scope. The electrolytic conductivity detector was used to develop the method performance statements and MDL listed in Tables 1 and 2. Guidelines for the use of alternate detectors are provided in Section 10.1.

5.4 Syringes—5-mL glass hypodermic with Luerlok tip (two each), if applicable to the purging device.

5.5 Micro syringes—25 μL, 0.006 in ID needle.

5.6 Syringe valve—2-way, with Luer ends (three each).

5.7 Syringe—5-mL, gas-tight with shut-off valve.

5.8 Bottle—15-mL, screw cap, with Teflon cap liner.

5.9 Balance—Analytical, capable of accurately weighing 0.0001 g.

6. Reagents

6.1 Reagent water—Reagent water is defined as a water in which an interferent is not observed at the MDL of the parameters of interest.

6.1.1 Reagent water can be generated by passing tap water through a carbon filter bed containing about 1 lb. of activated carbon (Filtrasorb-300 or equivalent (Calgon Corp.)).

6.1.2 A water purification system (Millipore Super-Q or equivalent) may be used to generate reagent water.

6.1.3 Reagent water may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the temperature at 90 °C, bubble a contaminant-free inert gas through the water for one hour. While still hot, transfer the water to a narrow mouth screw-cap bottle and seal with a Teflon-lined septum and cap.

6.2 Sodium thiosulfate—(ACS) Granular.

6.3 Trap Materials

6.3.1 Coconut charcoal (6/10 mesh sieved to 26 mesh), (Barnaby Chaney, CA-580-26 lot # M-2649 or equivalent).

6.3.2 2,6-Diphenylene oxide polymer—Tenax, (60/80 mesh), chromatographic grade or equivalent.

6.3.3 Methyl silicone packing—3% OV-1 on 60/80 mesh Chromosorb-W or equivalent.

6.3.4 Silica gel—35/60 mesh, Davison, grade-15 or equivalent.

6.4 Methyl Alcohol—Pesticide quality or equivalent.

6.5 Stock standard solutions—Stock standard solutions may be prepared from pure standard materials or purchased as certified solutions. Prepare stock standard solutions in methyl alcohol using assayed liquids or gas cylinders as appropriate. Because of the toxicity of some of the organohalides, primary dilutions of these materials should be prepared in a hood. A NIOSH/MESA approved toxic gas respirator should be used when the analyst handles high concentrations of such materials.

6.5.1 Place about 9.8 mL of methyl alcohol into a 10-mL ground glass stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 minutes or until all alcohol wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

6.5.2 Add the assayed reference material:

6.5.2.1 Liquids—Using a 100-μL syringe, immediately add two or more drops of assayed reference material to the flask, then reweigh. Be sure that the drops fall directly into the alcohol without contacting the neck of the flask.

6.5.2.2 Gases—To prepare standards for any of the six halocarbons that boil below 30 °C (bromomethane, chloroethane, chloromethane, dichlorodifluoromethane, trichlorofluoromethane, vinyl chloride), fill a 5-mL valved gas-tight syringe with the reference standard to the 5.0-mL mark. Lower the needle to 5 mm above the methyl alcohol meniscus. Slowly introduce the reference standard above the surface of the liquid (the heavy gas will rapidly dissolve into the methyl alcohol).

6.5.3 Reweigh, dilute to volume, stopper, then mix by inverting the flask several times. Calculate the concentration in micrograms per microliter from the net gain in weight. When compound purity is assayed to be 96% or greater, the weight can be used without correction to calculate the concentration of the stock standard. Commercially prepared stock standards can be used at any concentration if they are certified by the manufacturer or by an independent source.

6.5.4 Transfer the stock standard solution into a Teflon-sealed screw-cap bottle. Store, with minimal headspace, at −10 to −20 °C and protect from light.

6.5.5 Prepare fresh standards weekly for the six gases and 2-chloroethylvinyl ether. All other standards must be replaced after one month, or sooner if comparison with check standards indicate a problem.

6.6 Secondary dilution standards—Using stock standard solutions, prepare secondary dilution standards in methyl alcohol that contain the compounds of interest, either singly or mixed together. The secondary dilution standards should be prepared at concentrations such that the aqueous calibration standards prepared in Sections 7.3.1 or 7.4.1 will bracket the working range of the analytical system. Secondary dilution standards should be stored with minimal headspace and should be checked frequently for signs of degradation or evaporation, especially just prior to preparing calibration standards from them. Quality control check standards that can be used to determine the accuracy of calibration standards will be available from the U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, in Cincinnati, Ohio.

7. Calibration

7.1 Assemble a purge and trap device that meets the specifications in Section 5.2. Condition the trap overnight at 180 °C by backflushing with an inert gas flow of at least 20 mL/min. Prior to use daily condition traps 10 minutes while backflushing at 180 °C.

7.2 Connect the purge and trap device to a gas chromatograph. The gas chromatograph must be operated using temperature and flow rate parameters equivalent to those in Table 1. Calibrate the purge and trap-gas chromatographic system using either the external standard technique (Section 7.3) or the internal standard technique (Section 7.4).

7.3 External standard calibration procedure:

7.3.1 Prepare calibration standards at a minimum of three concentration levels for each parameter by carefully adding 20.0 µL of one or more secondary dilution standards to 100, 500, or 1000 mL of reagent water. A 25-µL syringe with a 0.006 inch ID needle should be used for this operation. One of the external standards should be at a concentration near, but above, the method detection limit (See Table 1) and the other concentrations should correspond to the expected range of concentrations found in real samples or should define the working range of the detector. These aqueous standards can be stored up to 24 hours, if held in sealed vials with zero headspace as described in Section 9.2. If not so stored, they must be discarded after one hour.

7.3.2 Analyze each calibration standard according to Section 10, and tabulate peak height or area responses versus the concentration in the standard. The results can be used to prepare a calibration curve for each compound. Alternatively, if the ratio of response to concentration (calibration factor) is a constant over the working range (<10% relative standard deviation, RSD), linearity through the origin can be assumed and the average ratio or calibration factor can be used in place of a calibration curve.

7.3.3 The working calibration curve or calibration factor must be verified on each working day by the measurement of one or more calibration standards. If the response for any parameter varies from the predicted response by more than ±10%, the test must be repeated using a fresh calibration standard. Alternatively, a new calibration curve or calibration factor must be prepared for that parameter.

7.4 Internal standard calibration procedure. To use this approach, the analyst must select one or more internal standards that are similar in analytical behavior to the compounds of interest. The analyst must further demonstrate that the measurement of the internal standard is not affected by method or matrix interferences. Because of these limitations, no internal standard can be suggested that is applicable to all samples. The compounds recommended for use as surrogate spikes in Section 8.7 have been used successfully as internal standards, because of their generally unique retention times.

7.4.1 Prepare calibration standards at a minimum of three concentration levels for each parameter of interest as described in Section 7.3.1.

7.4.2 Prepare a spiking solution containing each of the internal standards using the procedures described in Sections 6.5 and 6.6. It is recommended that the secondary dilution standard be prepared at a concentration of 15 µg/mL of each internal standard compound. The addition of 10 µL of this standard to 5.0 mL of sample or calibration standard would be equivalent to 30 µg/L.

7.4.3 Analyze each calibration standard, according to Section 10, adding 10 µL of internal standard spiking solution directly to the syringe (Section 10.4). Tabulate peak height or area responses against concentration for each compound and internal standard, and calculate response factors (RF) for each compound using equation 1.

$$\text{Eq. 1 } RF = (A_s C_{is})/(A_{is} C_s)$$

where:

A_s = Response for the parameter to be measured.
A_{is} = Response for the internal standard.
C_{is} = Concentration of the internal standard.
C_s = Concentration of the parameter to be measured.

If the RF value over the working range is a constant (<10% RSD), the RF can be assumed to be invariant and the average RF can be used for calculations. Alternatively, the results can be used to plot a calibration curve of response ratios, A_s/A_{is}, vs. RF.

7.4.4 The working calibration curve or RF must be verified on each working day by the measurement of one or more calibration standards. If the response for any parameter varies from the predicted response by more than ±10%, the test must be repeated using a fresh calibration standard. Alternatively, a new calibration curve must be prepared for that compound.

8. Quality Control

8.1 Each laboratory that uses this method is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and the analysis of spiked samples as a continuing check on performance. The laboratory is required to maintain performance records to define the quality of data that is generated. Ongoing performance checks must be compared with established performance criteria to determine if the results of analyses are within accuracy and precision limits expected of the method.

8.1.1 Before performing any analyses, the analyst must demonstrate the ability to generate acceptable accuracy and precision with this method. This ability is established as described in Section 8.2.

8.1.2 In recognition of the rapid advances that are occurring in chromatography, the analyst is permitted certain options to improve the separations or lower the cost of measurements. Each time such modifications are made to the method, the analyst is required to repeat the procedure in Section 8.2.

8.1.3 The laboratory must spike and analyze a minimum of 10% of all samples to monitor continuing laboratory performance. This procedure is described in Section 8.4.

8.2 To establish the ability to generate acceptable accuracy and precision, the analyst must perform the following operations.

8.2.1 Select a representative spike concentration for each compound to be measured. Using stock standards, prepare a quality control check sample concentrate in methyl alcohol 500 times more concentrated than the selected concentrations. Quality control check sample concentrates, appropriate for use with this method, will be available from the U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

8.2.2 Using a syringe, add 10 µL of the check sample concentrate to each of a minimum of four 5-mL aliquots of reagent water. A representative waste-

water may be used in place of the reagent water, but one or more additional aliquots must be analyzed to determine background levels, and the spike level must exceed twice the background level for the test to be valid. Analyze the aliquots according to the method beginning in Section 10.

8.2.3 Calculate the average percent recovery, (R), and the standard deviation of the percent recovery (s), for the results. Wastewater background corrections must be made before R and s calculations are performed.

8.2.4 Using Table 2, note the average recovery (X) and standard deviation (p) expected for each method parameter. Compare these to the calculated values for R and s. If $s > 2p$ or $|X - R| > 2p$, review potential problem areas and repeat the test.

8.3 The analyst must calculate method performance criteria and define the performance of the laboratory for each spike concentration and parameter being measured.

8.2.5 The U.S. Environmental Protection Agency plans to establish performance criteria for R and s based upon the results of interlaboratory testing. When they become available, these criteria must be met before any samples may be analyzed.

8.3.1 Calculate upper and lower control limts for method performance:

Upper Control Limit (UCL) = R + 3s
Lower Control Limit (LCL) = R − 3s

where R and s are calculated as in Section 8.2.3. The UCL and LCL can be used to construct control charts[7] that are useful in observing trends in performance. The control limits above must be replaced by method performance criteria as they become available from the U.S. Environmental Protection Agency.

8.3.2 The laboratory must develop and maintain separate accuracy statements of laboratory performance for wastewater samples. An accuracy statement for the method is defined as R ± s. The accuracy statement should be developed by the analysis of four aliquots of wastewater as described in Section 8.2.2, followed by the calculation of R and s. Alternately, the analyst may use four wastewater data points gathered through the requirement for continuing quality control in Section 8.4. The accuracy statements should be updated regularly.[7]

8.4 The laboratory is required to collect a portion of their samples in duplicate to monitor spike recoveries. The frequency of spiked sample analysis must be at least 10% of all samples or one sample per month, whichever is greater. One aliquot of the sample must be spiked and analyzed as described in Section 8.2. If the recovery for a particular parameter does not fall within the control limits for method performance, the results reported for that parameter in all samples processed as part of the same set must be qualified as described in Section 11.3. The laboratory should monitor the frequency of data so qualified to ensure that it remains at or below 5%.

8.5 Each day, the analyst must demonstrate through the analysis of reagent water, that interferences from the analytical system are under control.

8.6 It is recommended that the laboratory adopt additional quality assurance practices for use with this method. The specific practices that are most productive depend upon the needs of the laboratory and the nature of the samples. Field duplicates may be analyzed to monitor the precision of the sampling technique. When doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as gas chromatography with a dissimilar column, specific element detector, or mass spectrometer must be used. Whenever possible, the laboratory should perform analysis of standard reference materials and participate in relevant performance evaluation studies.

8.7 The analyst should maintain constant surveillance of both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard and blank with surrogate halocarbons. A combination of bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane is recommended to encompass the range of the temperature program used in this method. From stock standard solutions prepared as above, add a volume to give 7500 μg of each surrogate to 45 mL of reagent water contained in a 50-mL volumetric flask, mix and dilute to volume (15 ng/μL). If the internal standard calibration procedure is being used, the surrogate compounds may be added directly to the internal standard spiking solution (Section 7.4.2). Add 10 μL of this surrogate spiking solution directly into the 5-mL syringe with every sample and reference standard analyzed. Prepare a fresh surrogate spiking solution on a weekly basis.

9. Sample Collection, Preservation, and Handling

9.1 All samples must be iced or refrigerated from the time of collection until extraction. If the sample contains free or combined chlorine, add sodium thiosulfate preservative (10 mg/40 mL is sufficient for up to 5 ppm Cl_2) to the empty sample bottle just prior to shipping to the sampling site. USEPA methods 330.4 and 330.5 may be used for measurement of residual chlorine.[8] Field test kits are available for this purpose.

9.2 Grab samples must be collected in glass containers having a total volume of at least 25 mL. Fill the sample bottle just to overflowing in such a manner that no air bubbles pass through the sample as the bottle is being filled. Seal the bottle so that no air bubbles are entrapped in it. If preservative has been added, shake vigorously for one minute. Maintain the hermetic seal on the sample bottle until time of analysis.

9.3 All samples must be analyzed within 14 days of collection.

10. Sample Extraction and Gas Chromatography

10.1 Table 1 summarizes the recommended operating conditions for the gas chromatograph. Included in this Table are estimated retention times and method detection limits that can be achieved by this method. An example of the separations achieved by Column 1 is shown in Figure 5. Other packed columns, chromatographic conditions, or detectors may be used if the requirements of Section 8.2 are met.

10.2 Calibrate the system daily as described in Section 7.

10.3 Adjust the purge gas (nitrogen or helium) flow rate to 40 mL/min. Attach the trap inlet to the purging device, and set the device to purge. Open the syringe valve located on the purging device sample introduction needle.

10.4 Allow sample to come to ambient temperature prior to introducing it to the syringe. Remove the plunger from a 5-mL syringe and attach a closed syringe valve. Open the sample bottle (or standard) and carefully pour the sample into the syringe barrel to just short of overflowing. Replace the

syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the sample volume to 5.0 mL. Since this process of taking an aliquot destroys the validity of the sample for future analysis, the analyst should fill a second syringe at this time to protect against possible loss of data. Add 10.0 µL of the surrogate spiking solution (8.7) and 10.0 µL of the internal standard spiking solution (Section 7.4.2), if applicable, through the valve bore, then close the valve.

10.5 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valves and inject the sample into the purging chamber.

10.6 Close both valves and purge the sample for 11.0 ± .1 minutes at ambient temperature.

10.7 After the 11-minute purge time, attach the trap to the chromatograph, adjust the device to the desorb mode, and begin to temperature program the gas chromatograph. Introduce the trapped materials to the GC column by rapidly heating the trap to 180 °C while backflushing the trap with an inert gas between 20 and 60 mL/min for four minutes. If rapid heating of the trap cannot be achieved, the gas chromatographic column must be used as a secondary trap by cooling it to 30 °C (subambient temperature, if poor peak geometry or random retention time problems persist) instead of the initial program temperature of 45 °C.

10.8 While the trap is being desorbed into the gas chromatograph, empty the purging chamber using the sample introduction syringe. Wash the chamber with two 5-mL flushes of reagent water.

10.9 After desorbing the sample for four minutes recondition the trap by returning the purge and trap device to the purge mode. Wait 15 seconds then close the syringe valve on the purging device to begin gas flow through the trap. The trap temperature should be maintained at 180 °C. After approximately seven minutes turn off the trap heater and open the syringe valve to stop the gas flow through the trap. When cool the trap is ready for the next sample.

10.10 The width of the retention time window used to make identifications should be based upon measurements of actual retention time variations of standards over the course of a day. Three times the standard deviation of a retention time for a compound can be used to calculate a suggested window size; however, the experience of the analyst should weigh heavily in the interpretation of chromatograms.

10.11 If the response for the peak exceeds the working range of the system, prepare a dilution of the sample with reagent water from the aliquot in the second syringe and reanalyze.

11. Calculations

11.1 Determine the concentration of individual compounds in the sample.

11.1.1 If the external standard calibration procedure is used, calculate the concentration of material from the peak response using the calibration curve or calibration factor determined in Section 7.3.2.

11.1.2 If the internal standard calibration procedure was used, calculate the concentration in the sample using the response factor (RF) determined in Section 7.4.3 and equation 2.

Eq. 2.

Concentration $\mu g/L = (A_s C_{is})/(A_{is})(RF)$

where:

A_s = Response for the parameter to be measured.

A_{is} = Response for the internal standard.

C_s = Concentration of the internal standard.

11.2 Report results in micrograms per liter. When duplicate and spiked samples are analyzed, report all data obtained with the sample results.

11.3 For samples processed as part of a set where the spiked sample recovery falls outside of the control limits which were established according to Section 8.3, data for the affected parameters must be labeled as suspect.

12. Method Performance

12.1 The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero.[1] The MDL concentrations listed in Table 1 were obtained using reagent water.[9] Similar results were achieved using representative wastewaters. The MDL actually achieved in a given analysis will vary depending on instrument sensitivity and matrix effects.

12.2 This method is recommended for use in the concentration range from the MDL up to 1000 × MDL. Direct aqueous injection techniques should be used to measure concentration levels above 1000 × MDL.

12.3 In a single laboratory (Monsanto Research), using reagent water and wastewaters spiked at or near background levels, the average recoveries presented in Table 2 were obtained[9]. The standard deviation of the measurement in percent recovery is also included in Table 2[9].

12.4 The U.S. Environmental Protection Agency is in the process of conducting an interlaboratory method study to fully define the performance of this method.

References

1. See Appendix A.

2. Bellar, T.A., and Lichtenberg, J.J. *Journal American Water Works Association, 66,* 739, (1974).

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4. "Carcinogens—Working With Carcinogens," Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, Publication No. 77-206, Aug. 1977.

5. "OSHA Safety and Health Standards, General Industry," (29 CFR 1910), Occupational Safety and Health Administration, OSHA 2206, (Revised, January 1976).

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7. "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," EPA-600/4-79-019, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory—Cincinnati, Ohio 45268, March 1979.

8. "Methods 330.4 (Titrimetric, DPD-FAS) and 330.5 (Spectrophotometric, DPD) for Chlorine, Total Residual," Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, U.S. Environmental Protection Agency,

Environmental Monitoring and Support Laboratory – Cincinnati, Ohio 45268, March 1979.
9. "EPA Method Validation Study 23, Method 601 (Purgeable Halocarbons)," Report for EPA Contract 68-03-2856 (In preparation).

Table 1. Chromatographic Conditions and Method Detection Limits

Parameter	Retention Time (min.) Column 1	Retention Time (min.) Column 2	Method Detection Limit µg/L
Chloromethane	1.50	5.28	0.08
Bromomethane	2.17	7.05	1.18
Dichlorodifluoromethane	2.62	nd	1.81
Vinyl chloride	2.67	5.28	0.18
Chloroethane	3.33	8.68	0.52
Methylene chloride	5.25	10.1	0.25
Trichlorofluoromethane	7.18	nd	nd
1,1-Dichloroethene	7.93	7.72	0.13
1,1-Dichloroethane	9.30	12.6	0.07
trans-1,2-Dichloroethene	10.1	9.38	0.10
Chloroform	10.7	12.1	0.05
1,2-Dichloroethane	11.4	15.4	0.03
1,1,1-Trichloroethane	12.6	13.1	0.03
Carbon tetrachloride	13.0	14.4	0.12
Bromodichloromethane	13.7	14.6	0.10
1,2-Dichloropropane	14.9	16.6	0.04
trans-1,3-Dichloropropene	15.2	16.6	0.34
Trichloroethene	15.8	13.1	0.12
Dibromochloromethane	16.5	16.6	0.09
1,1,2-Trichloroethane	16.5	18.1	0.02
cis-1,3-Dichloropropene	16.5	18.0	0.20
2-Chloroethylvinyl ether	18.0	nd	0.13
Bromoform	19.2	19.2	0.20
1,1,2,2-Tetrachloroethane	21.6	nd	0.03
Tetrachloroethene	21.7	15.0	0.03
Chlorobenzene	24.2	18.8	0.25
1,3-Dichlorobenzene	34.0	22.4	0.32
1,2-Dichlorobenzene	34.9	23.5	0.15
1,4-Dichlorobenzene	35.4	22.3	0.24

nd = not determined

Column 1 conditions: Carbopack B 60/80 mesh coated with 1% SP-1000 packed in an 8 ft × 0.1 in ID stainless steel or glass column with helium carrier gas at 40 mL/min flow rate. Column temperature held at 45 °C for 3 min. then programmed at 8 °C/min. to 220° and held for 15 min.

Column 2 conditions: Porasil-C 100/120 mesh coated with n-octane packed in a 6 ft × 0.1 in ID stainless steel or glass column with helium carrier gas at 40 mL/min flow rate. Column temperature held at 50 °C for 3 min then programmed at 6 °C/min to 170° and held for 4 min.

Table 2. Single Operator Accuracy and Precision

Parameter	Average Percent Recovery	Standard Deviation %	Spike Range (µg/L)	Number of Analyses	Matrix Types
Bromodichloromethane	100.9	5.0	0.43-46.7	21	3
Bromoform	89.5	9.0	1.45-50	20	3
Bromomethane	105.0	17.3	3.39-49.2	21	3
Carbon tetrachloride	82.5	25.6	0.55-50	19	3
Chlorobenzene	93.9	8.9	2.21-50	20	3
Chloroethane	91.5	22.4	3.95-50	21	3
2-Chloroethylvinyl ether	96.3	9.9	4.39-133	20	3
Chloroform	101.7	20.6	0.44-50	20	3
Chloromethane	91.4	13.4	0.55-23.9	21	3
Dibromochloromethane	98.3	6.5	0.75-93.0	21	3
1,2-Dichlorobenzene	10.20	2.0	4.89-154	21	3
1,3-Dichlorobenzene	91.6	4.3	2.94-46.7	21	3
1,4-Dichlorobenzene	97.5	9.3	2.99-51.6	21	3
Dichlorodifluoromethane	87.8	18.0	2.18-43.4	21	3
1,1-Dichloroethane	102.3	5.5	0.44-46.7	21	3
1,2-Dichloroethane	97.8	4.8	0.44-46.7	21	3
1,1-Dichloroethene	101.1	21.7	0.37-50	19	3
trans-1,2-Dichloroethene	91.0	19.3	0.44-98.0	20	3
1,2-Dichloropropane	97.7	8.8	0.29-39.0	21	3
cis-1,3-Dichloropropene	86.7	6.0	0.44-46.7	21	3
trans-1,3-Dichloropropene	73.5	17.2	0.43-50	20	3
Methylene chloride	97.9	2.6	0.73-46.7	21	3
1,1,2,2-Tetrachloroethane	91.9	15.0	0.46-46.7	21	3
Tetrachloroethene	94.1	18.1	0.50-35.0	21	3
1,1,1-Trichloroethane	75.1	12.5	0.37-29.0	21	3
1,1,2-Trichloroethane	91.0	25.1	0.45-50	21	3
Trichloroethene	106.1	7.4	0.38-46.7	21	3
Trichlorofluoromethane	89.3	13.9	149	14	2
Vinyl chloride	101.9	11.4	0.82-32.3	21	3

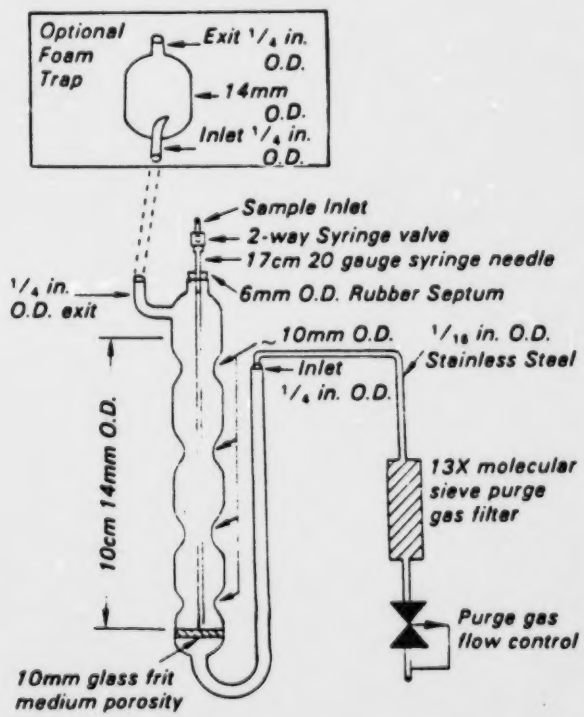

Figure 1. *Purging device*

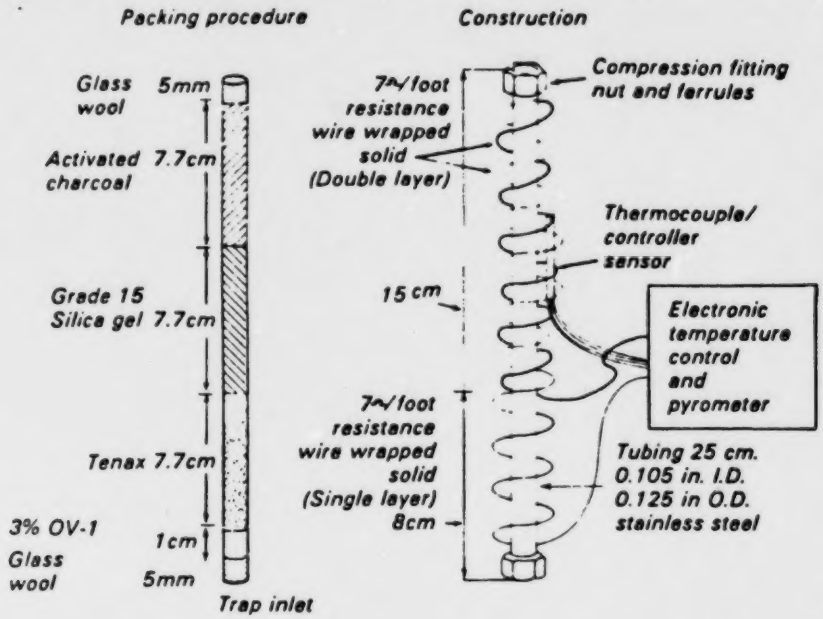

Figure 2. *Trap packings and construction to include desorb capability*

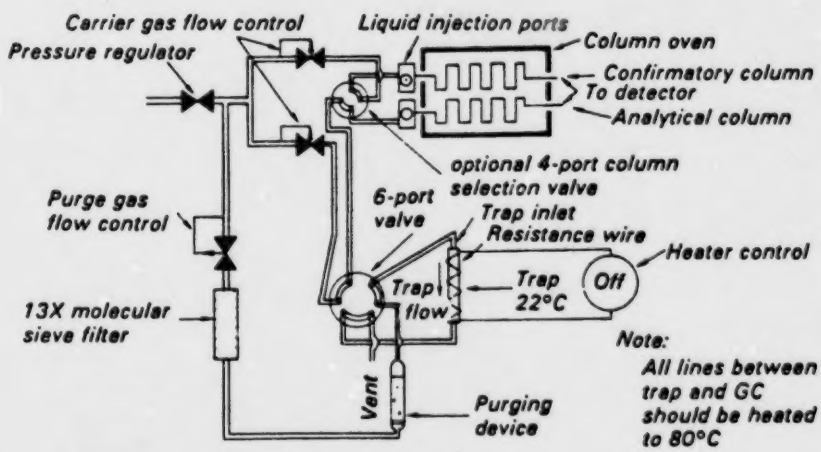

Figure 3. *Schematic of purge and trap device — purge mode*

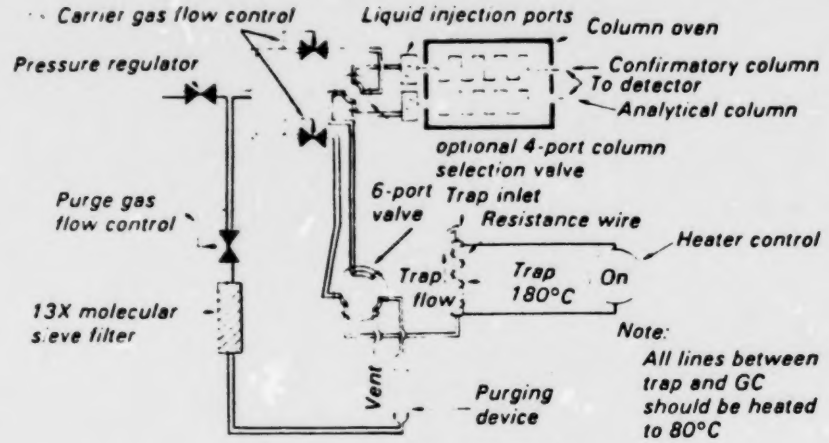

Figure 4. *Schematic of purge and trap device — desorb mode*

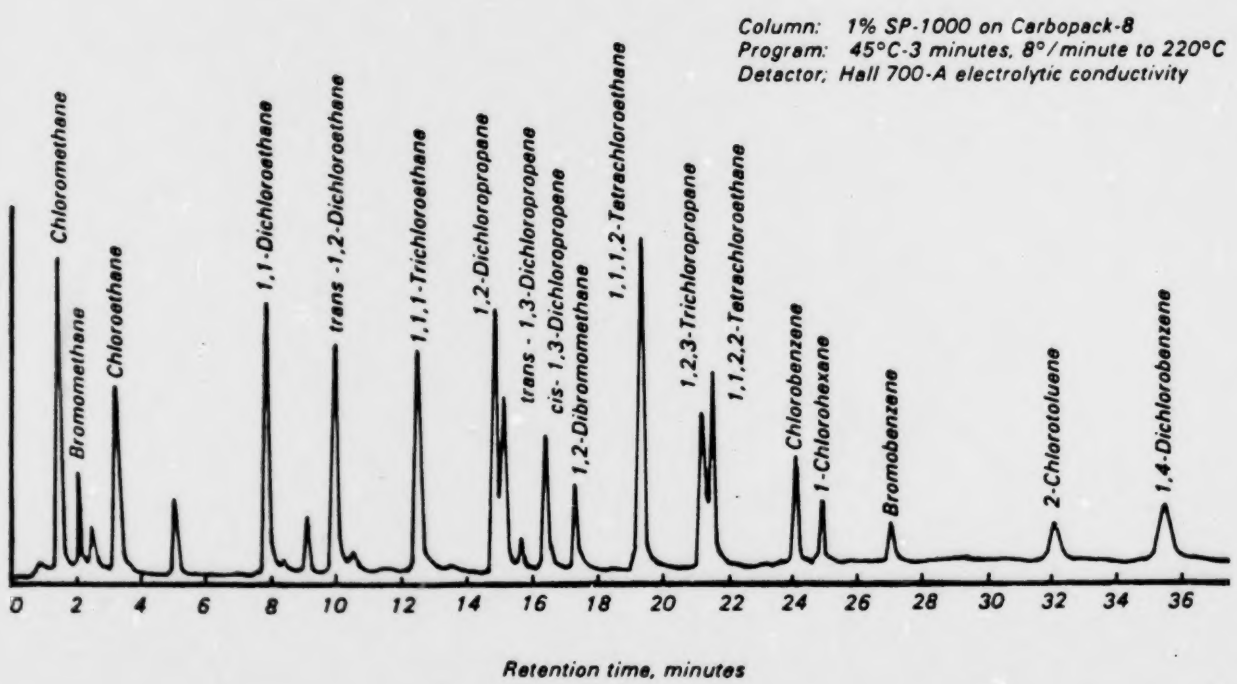

Figure 5. *Gas chromatogram of purgeable halocarbons*

APPENDIX B

ADDITIONAL NOTES ON METHOD 601 SENT TO PARTICIPATING LABORATORIES FOR PRESTUDY CONFERENCE ANALYSES

ADDITIONAL NOTES ON METHOD 601

5.2 Appropriate purge/trap samples are those such as the Hewlett Packard with up to a 15 ml purging vessel or the Tekmar with 5 ml purging vessel. Do not use Tekmar with 25 mL purging vessel.

5.3 Acceptable detectors are the Hall, Coulsen, and Dohrman detectors. Electron capture is <u>not</u> considered halide specific!

5.8 A 10 to 15 ml screw-cap is acceptable. We have found a 10 mL to be preferable.

6.2/ 9.2 Any sodium thiosulfate needed in the wastewater samples has already been added by MRC.

6.3 The trap for this study <u>must</u> contain all four of the specified materials. Any lab having difficulty obtaining the specified silica gel or coconut charcoal may request a sample from MRC. Also, traps containing the specified materials are available from Tekmar.

6.5.2.2 Note, if chloroethane is purchased as a liquid, the container must be cooled in dry ice before opening since its boiling point is 3°C.

7. Note, all standards and samples are to be analyzed by purge/trap. Determination of purging efficiency, or recovery by direct injection is not required for this study. Method precision and sensitivity limits will be determined by multiple laboratory results and do not need to be determined by individual laboratories.

7.4.3 Reference to section 10.6 in the method should be 10.4.

8.5 Standard quality assurance practices should be used. In the conduct of this work, it is recommended that a blank and a three point calibration curve be analyzed on the first day. On following days, a blank and one point should be sufficient if the point falls within 10% of the previously generated calibration curve.

8.6 For the purposes of this study do <u>not</u> add surrogate compounds. The three mixes have been selected to optimize separation between the peaks, without consideration of surrogate compounds.

9.2 Samples should be refrigerated until analysis.

9.3 Delete.

10.4 Delete last sentence concerning surrogates.

10.8 We recommend a minimum of three washes.

10.1 The column packing material <u>must</u> be Carbopack B 60/80 mesh coated with 1% SP-1000 in an 8 foot by 0.1 inch (or 2 mm) ID column.

Note: Any type of mechanical shock may damage the packing material (cracking the packing material and producing fines). The instructions included in the Carbopack should be followed to avoid this problem when packing your own columns. This problem may result in plugged columns, decreased separation efficiency and/or a dirty furnace in the detector.

11.2 No duplicates will be run.

Table 1 - The samples may be analyzed by following the temperature programming as indicated except hold for 15 min. or until all compounds are eluted.

APPENDIX C

RAW DATA: METHOD 601

TABLE 18. RAW DATA FOR TRICHLOROFLUOROMETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	10.10	11.70	8.96	11.20	7.72	11.80	8.52	11.20	8.95	10.40	9.90	0.00*
2	7.35	8.11	6.69	7.92	6.62	8.87	6.87	8.36	4.78	7.67	7.94	8.50
3	1.41*	1.96*	1.51*	1.86*	1.06*	1.40*	9.00	0.00*	0.82*	1.39*	1.07*	0.74*
4	8.89	12.30	8.15	10.80	7.52	8.19	8.85	12.40	7.90	11.20	8.26	11.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	5.71	6.95	5.14	7.63	5.36	7.97	7.42	8.47	7.14	9.00	7.43	8.64
7	7.77	10.90	5.86	9.12	5.83	9.45	8.88	9.34	7.46	8.64	7.16	10.20
8	11.90	13.00	8.41	7.00	8.53	11.50	3.36	7.45	3.84	5.53	3.43	3.17
9	5.37	5.60	4.82	7.42	5.12	7.34	5.30	7.15	3.81	5.54	3.05	5.49
10	1.94	13.70	1.61	9.38	2.94	18.20*	1.66	12.50	1.86	12.70	1.59	14.20
11	4.14	6.29	5.34	4.41	6.38	7.00	5.47	8.06	4.52	5.76	3.83	5.72
12	7.98	11.00	8.51	11.70	4.37	8.30	11.20	12.30	8.33	12.10	8.09	8.62
13	19.00*	14.80	15.90*	11.80	16.30*	11.20	18.00*	8.00	7.65	9.04	7.12	8.17
14	5.09	8.03	4.32	7.96	6.21	9.08	6.54	7.77	5.53	7.78	7.93	8.92
15	7.03	8.17	3.24	5.07	5.33	6.56	4.35	5.70	4.29	6.15	4.75	6.18
16	12.60	12.40	10.30	10.90	8.88	11.60	6.31	12.20	7.91	0.00*	6.83	5.33
17	4.23	5.30	4.00	5.70	4.35	6.00	5.60	6.80	4.70	6.00	*	7.00
18	3.30	3.09	0.94	1.41	4.99	6.04	3.03	2.94	5.39	6.33	2.59	3.54
19	5.81	7.30	5.80	10.20	10.00	12.20	10.60	11.40	9.70	9.58	12.10	18.50*
20	5.97	8.18	7.30	9.48	6.54	8.79	6.93	8.90	7.94*	10.90*	6.98	6.74

TABLE 18 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	51.10	43.90	51.40	52.50	41.00	50.80	40.30	50.50	39.70	47.80	46.00	55.30
2	34.60	44.30	29.90	40.50	34.40	39.00	28.10	44.10	33.80	39.60	30.70	43.80
3	4.97*	8.81*	6.11*	8.47*	6.12*	3.47*	84.50*	4.45*	4.73*	5.07*	5.06*	6.60*
4	33.80	40.60	35.30	49.90	36.40	44.90	40.00	42.60	39.40	47.90	41.80	52.10
5	*	*	*	*	*	*	*	*	*	*	*	*
6	37.90	46.40	35.90	51.40	36.50	55.00	37.10	60.00	39.40	54.30	22.90	56.40
7	43.10	54.00	44.90	48.50	37.70	58.20	42.50	58.00	39.30	39.10	48.70	51.20
8	23.50	32.60	29.80	39.00	23.40	25.20	20.10	30.30	15.80	23.80	19.00	37.00
9	28.30	42.40	28.40	38.80	29.80	57.50	34.80	38.40	33.30	41.80	32.30	40.90
10	49.40	56.20	49.00	58.30	44.50	49.90	54.70	45.00	50.80	51.40	46.30	66.00
11	39.60	40.50	33.80	36.40	37.90	45.30	37.30	46.90	33.80	36.10	34.40	42.40
12	48.60	39.50	35.80	67.40	39.10	46.70	21.20	78.70	25.10	21.80	21.10	71.50
13	40.10	54.70	48.10	53.60	48.70	55.90	39.00	58.40	51.90	44.80	38.40	50.50
14	33.20	31.60	14.00	31.90	36.60	37.50	34.20	44.90	35.70	44.60	31.30	39.00
15	30.60	38.70	27.00	33.00	27.70	34.20	28.00	34.10	26.60	30.40	28.60	33.90
16	34.90	45.90	0.00*	45.00	42.00	60.80	44.20	58.20	0.00*	0.00*	51.90	55.00
17	40.00	48.90	43.20	61.90	40.40	55.70	45.00	49.00	38.30	55.20	45.00	59.00
18	34.80	40.70	39.40	39.90	35.40	48.60	27.80	48.30	28.10	39.90	32.10	40.00
19	24.70	35.60	40.20	49.70	31.10	47.60	51.80	59.50	47.50	47.60	49.70	65.30
20	37.90	49.30	4.73	65.40	41.40	50.10	38.60	60.50	46.00*	62.50*	33.70	43.20

TABLE 18 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
LAB NUMBER												
1	362.00	516.00	256.00	549.00	438.00	574.00	313.00	341.00	352.00	480.00	173.00	308.00
2	331.00	482.00	354.00	507.00	346.00	509.00	367.00	498.00	388.00	514.00	387.00	473.00
3	152.00*	185.00*	160.00*	184.00*	151.00*	167.00*	129.00	142.00	133.00*	170.00*	134.00*	174.00*
4	403.00	465.00	331.00	458.00	452.00	564.00	427.00	508.00	411.00	595.00	423.00	616.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	494.00	395.00	508.00	440.00	505.00	411.00	515.00	493.00	508.00	489.00	523.00	480.00
7	465.00	560.00	508.00	545.00	415.00	569.00	451.00	563.00	527.00	545.00	493.00	532.00
8	235.00	335.00	266.00	344.00	245.00	330.00	276.00	362.00	287.00	395.00	499.00	416.00
9	542.00	706.00	525.00	711.00	533.00	680.00	481.00	770.00	579.00	692.00	527.00	833.00
10	264.00	283.00	245.00	262.00	235.00	232.00	254.00	292.00	296.00	255.00	274.00	295.00
11	309.00	493.00	310.00	488.00	357.00	519.00	344.00	537.00	332.00	479.00	342.00	495.00
12	589.00	672.00	358.00	745.00	519.00	719.00	647.00	879.00	492.00	859.00	571.00	785.00
13	304.00	459.00	357.00	437.00	360.00	466.00	358.00	452.00	298.00	479.00	395.00	434.00
14	339.00	196.00	244.00	404.00	336.00	411.00	327.00	466.00	329.00	427.00	320.00	439.00
15	378.00	648.00	313.00	432.00	333.00	550.00	350.00	617.00	330.00	561.00	387.00	627.00
16	156.00	171.00	171.00	185.00	177.00	184.00	167.00	0.00*	0.00*	187.00	164.00	184.00
17	219.00	177.00	191.00	215.00	233.00	288.00	161.00	178.00	166.00	181.00	197.00	206.00
18	343.00	471.00	389.00	527.00	453.00	824.00	389.00	643.00	413.00	506.00	406.00	522.00
19	277.00	299.00	308.00	314.00	324.00	330.00	337.00	369.00	317.00	355.00	302.00	395.00
20	389.00	524.00	522.00	699.00	411.00	542.00	517.00	659.00	526.00*	654.00*	372.00	486.00

TABLE 19. RAW DATA FOR CHLOROMETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.41	10.10	6.22	12.20	5.13	9.93	8.69	10.00	5.81	12.90	12.30	4.12
2	4.22	4.92	5.04	6.58	6.03	7.91	8.83	10.70	4.47	6.68	5.01	3.73
3	0.43	0.85	0.88	0.72	0.22	0.46	0.47	0.63	0.24	16.10	19.20	12.80
4	5.39	7.77	6.24	7.44	5.04	6.17	5.36	7.76	5.33	7.36	0.50	7.90
5	62.50*	0.00*	4.46	4.49	0.00*	0.00*	0.00*	4.35	0.00*	0.00*	14.40	40.70
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	10.60	12.60	10.30	11.10	9.63	11.20	10.80	11.20	10.20	12.00	6.50	11.80
8	1.41	3.27	5.45	10.20	6.44	9.31	0.82	4.36	2.78	2.54	0.00*	2.71
9	7.35	5.96	5.48	6.32	5.24	8.42	5.44	7.16	2.15	5.00	8.65	11.10
10	38.30*	10.00	57.20*	46.90*	3.23	18.30	8.53	2.82	20.30	9.80	2.25	12.10
11	2.85	9.92	0.00*	3.07	0.00*	6.87	1.34	8.78	0.81	5.18	16.10*	14.00*
12	4.07	6.69	5.07	2.09	2.61	3.41	2.92	2.90	2.96	3.72	12.80	14.60
13	13.30	10.80	11.90	15.50	4.20	12.80	12.20	26.80*	2.23	12.20	0.00*	54.70
14	10.50	13.60	17.50	11.50	11.60	14.50	9.05	12.60	10.10	11.50	7.60	10.80
15	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	74.90*	96.10*
16	17.30	18.70	12.50	16.80	11.20	16.10	10.90	16.40	14.30	0.00*	24.10	50.50
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	3.05	2.25	1.99	2.52	1.70	2.27	2.44	6.52	1.58	1.97	0.00*	0.00*
19	4.80	4.97	5.23	6.06	4.26	6.03	7.57	8.12	6.41	5.42	10.30	11.80
20	1.94	3.07	1.12	0.81	3.97	2.56	20.90	5.15	10.20	7.46	0.00*	1.60

TABLE 19 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	54.10	28.20	43.30	50.70	27.80	56.60	41.70	49.20	43.30	48.80	30.90	63.90
2	19.90	29.70	23.60	42.70	27.30	33.00	2.32	27.10	15.80	31.30	13.60	30.00
3	0.38	1.41	4.86	2.32	3.19	1.68	0.19	23.20	0.69	3.90	2.51	2.11
4	27.00	41.00	31.70	49.30	35.40	37.70	37.20	34.70	30.90	49.30	27.60	39.30
5	21.30	33.90	30.80	28.40	79.20	134.00	23.40	29.80	26.90	17.30	54.80	45.20
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	31.50	40.30	34.10	45.80	31.10	41.60	34.10	44.60	35.10	34.40	30.20	50.40
8	15.70	22.70	19.80	27.10	17.00	17.60	17.10	21.10	2.72	13.90	7.94	20.20
9	20.30	31.50	36.50	43.20	36.20	58.40	35.00	40.00	43.20	49.80	35.10	51.70
10	51.60	11.40	66.80	1.07	18.30	44.00	42.00	23.60	53.60	32.40	45.40	47.00
11	133.00*	82.80	83.80	67.10	137.00*	91.50	119.00	65.90	74.60	83.00	103.00*	89.50*
12	18.20	3.27	16.00	23.90	13.80	27.00	9.97	6.00	0.00*	5.20	4.60	42.50
13	32.90	37.90	51.10	44.50	53.90	11.60	38.20	21.10	10.40	17.60	9.63	50.30
14	59.50	71.70	49.60	70.60	58.10	71.90	25.10	34.50	45.70	53.50	50.70	62.00
15	75.90	96.80	103.00	111.00	102.00	113.00	104.00	118.00	99.80	104.00	146.00*	157.00*
16	53.80	73.70	53.40	92.50	69.90	97.00	73.50	101.00	60.40	69.80	91.00*	127.00*
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	30.80	44.90	16.00	28.20	20.70	23.70	23.70	46.10	16.70	25.10	0.00*	2.83
19	19.90	25.70	20.40	27.40	21.80	24.50	31.90	37.70	23.50	24.50	19.40	27.50
20	13.20	15.10	33.30	53.30	31.40	50.60	56.50	81.30	28.40	45.70	19.20	34.10

TABLE 19 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00
LAB NUMBER												
1	298.00	400.00	239.00	466.00	387.00	518.00	435.00	471.00	432.00	596.00	256.00	560.00
2	135.00	223.00	340.00	498.00	277.00	416.00	263.00	331.00	233.00	338.00	227.00	248.00
3	377.00	242.00	181.00	226.00	360.00	213.00	280.00	297.00	88.00	344.00	241.00	339.00
4	234.00	344.00	265.00	360.00	320.00	397.00	306.00	413.00	250.00	408.00	286.00	402.00
5	178.00	453.00	264.00	276.00	478.00	359.00	419.00	305.00	105.00	168.00	184.00	274.00
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	439.00	609.00	402.00	467.00	422.00	474.00	375.00	517.00	478.00	559.00	407.00	511.00
8	173.00	283.00	217.00	298.00	187.00	286.00	212.00	300.00	200.00	305.00	393.00	344.00
9	516.00	635.00	493.00	570.00	447.00	597.00	367.00	659.00	305.00	546.00	474.00	652.00
10	1860.00*	2232.00*	1070.00*	2800.00*	925.00	3190.00*	829.00*	637.00	2100.00*	1770.00*	1150.00*	1910.00*
11	465.00	679.00	593.00	774.00	567.00	789.00	453.00	731.00	499.00	610.00	474.00*	894.00*
12	211.00	77.70	60.70	329.00	167.00	266.00	463.00	618.00	84.30	28.00	122.00	435.00
13	310.00	524.00	375.00	583.00	327.00	598.00	371.00	514.00	67.70	142.00	457.00	380.00
14	550.00	502.00	529.00	455.00	551.00	553.00	173.00	413.00	297.00	598.00	310.00	533.00
15	287.00	410.00	316.00	418.00	410.00	515.00	389.00	582.00	323.00	436.00	590.00*	983.00*
16	250.00	298.00	296.00	352.00	320.00	334.00	300.00	303.00	269.00	341.00	317.00	340.00
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	311.00	465.00	375.00	701.00	101.00	379.00	611.00	863.00	424.00	551.00	370.00	483.00
19	154.00	193.00	188.00	202.00	244.00	267.00	284.00	319.00	231.00	313.00	191.00	315.00
20	139.00	239.00	430.00	795.00	802.00	1060.00*	340.00	474.00	685.00	844.00	285.00	467.00

TABLE 20. RAW DATA FOR VINYL CHLORIDE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.37	11.70	8.01	10.90	6.90	12.20	7.60	10.80	3.88	11.90	8.08	7.08
2	6.92	8.24	6.59	8.47	6.72	9.31	7.56	8.98	5.75	8.51	6.96	8.53
3	11.10*	17.90*	12.70*	17.90*	11.10	14.10	6.83	3.47	6.06	13.60	7.78	14.20
4	7.12	9.89	8.56	11.20	6.91	8.79	8.37	10.80	7.41	10.00	8.54	11.90
5	6.01	9.17	6.01	7.92	6.43	10.70	6.10	7.67	5.71	8.07	9.99	15.50
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	9.72	14.50	7.49	9.03	7.46	13.60	11.20*	12.30*	9.89*	12.70*	11.90	11.60
8	12.90*	39.10*	6.44	8.13	7.42	8.45	3.41	27.60*	4.15	4.38	6.91	6.91
9	10.30	9.38	7.02	10.40	6.24	14.90	17.90*	9.50	5.38	7.45	4.01	7.80
10	8.10	17.40	8.17	13.80	10.40	15.20	6.20	13.90	8.10	16.20	7.61	19.60
11	5.83	9.60	6.11	8.38	7.45	8.83	7.13	9.60	6.89	8.26	6.97	9.88
12	4.91	7.36	5.62	5.96	5.95	8.08	6.18	5.61	5.78	8.06	5.11	14.10
13	12.10	10.90	10.30	12.30	10.30	11.50	11.90	12.60	8.66	11.80	8.23	12.20
14	6.89	9.79	8.80	8.62	8.90	11.40	4.44	11.20	7.33	11.70	8.12	10.80
15	5.67	7.54	6.03	8.43	7.37	9.81	5.88	8.58	5.52	7.34	0.00*	9.48
16	10.80	12.10	0.00*	6.91	3.67	3.72	4.87	6.96	11.70	1.63	2.50*	0.00*
17	*	*	*	*	*	*	*	*	*	*	*	*
18	4.37	3.41	1.21	1.59	2.86*	3.66*	0.96	1.36	3.00	3.94	2.06	2.73
19	4.80	6.53	6.74	9.21	6.91	8.27	9.23	9.31	4.95	4.95	11.60	24.10
20	5.36	7.74	2.62	5.24	2.86	5.12	6.99	8.41	7.60	10.20	5.49	7.17

TABLE 20 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	26.90	20.50	30.20	28.30	23.80	41.40	39.70	52.80	35.00	44.00	44.80	63.50
2	39.20	48.70	33.90	46.10	40.20	44.70	38.40	50.20	41.00	45.70	35.30	51.50
3	40.10*	68.90*	44.10*	72.70*	50.10	27.60	9.02*	44.70	34.30	53.10	46.70	63.40
4	34.40	44.50	34.60	51.40	40.60	47.10	42.40	43.90	42.30	51.10	41.40	52.50
5	36.00	45.70	40.50	44.70	34.90	40.50	38.90	49.00	38.90	47.60	48.60	59.10
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	66.80*	60.10	63.10	70.40	52.40	80.60	56.10*	72.70*	64.50*	63.40*	57.70	62.50
8	44.10*	70.30*	69.00	87.40	48.30	63.90	67.10*	71.60	24.40	38.60	43.20	58.10
9	42.10	56.00	46.40	52.40	52.50	53.40	47.30	62.90	54.40	59.40	50.30	62.30
10	48.80	60.10	47.60	61.60	43.20	50.50	48.10	45.60	49.90	70.60	49.20	46.90
11	42.10	58.70	47.40	59.90	49.80	63.60	52.00	66.00	49.80	59.50	48.20	64.40
12	34.60	18.80	37.10	47.90	21.40	31.40	32.30	16.80*	11.60	16.20	17.00*	55.80
13	38.40	46.50	42.70	50.20	42.40	43.60	40.10	55.80	37.80	45.60	39.60	53.30
14	41.00	48.80	37.50	50.50	43.80	52.50	46.80	52.10	35.80	46.40	50.40	53.80
15	41.70	55.30	48.10	58.10	45.30	55.90	49.40	63.90	44.40	48.40	50.30	57.40
16	31.50	47.50	34.20	39.30	38.90	67.80	38.10	66.10	30.00	39.90	29.20*	51.90*
17	*	*	*	*	*	*	*	*	*	*	*	*
18	28.10	37.90	29.00	41.30	18.50*	25.20*	32.30	45.20	33.20	45.30	28.20	37.10*
19	35.30	37.30	35.30	45.60	37.10	27.90	48.00	46.70	31.50	27.90	38.60	55.40
20	27.40	33.30	25.80	30.00	29.10	38.30	37.60	41.00	29.30	45.10	38.20	51.30

TABLE 20 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00
LAB NUMBER												
1	456.00	522.00	314.00	776.00	547.00	689.00	591.00	594.00	628.00	401.00	404.00	308.00
2	396.00	498.00	428.00	540.00	416.00	562.00	459.00	546.00	462.00	564.00	433.00	504.00
3	720.00*	906.00*	789.00*	856.00*	762.00	743.00	590.00	539.00	607.00	770.00	465.00	752.00
4	380.00	455.00	381.00	457.00	444.00	526.00	444.00	548.00	437.00	546.00	422.00	540.00
5	408.00	527.00	369.00	436.00	318.00	515.00	400.00	634.00	406.00	474.00	311.00	476.00
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	541.00	677.00	628.00	655.00	591.00	629.00	495.00*	707.00*	612.00*	674.00*	603.00	710.00
8	768.00*	1176.00*	998.00*	1212.00*	784.00	1205.00	982.00*	1211.00*	939.00	1253.00	1756.00*	1499.00*
9	814.00*	1026.00	702.00	983.00	682.00	920.00	688.00	973.00	687.00	991.00	762.00	941.00
10	308.00	315.00	270.00	298.00	283.00	313.00	248.00	335.00	338.00	320.00	312.00	320.00
11	617.00	744.00	573.00	703.00	595.00	789.00	558.00	807.00	554.00	817.00	558.00	746.00
12	330.00	170.00	139.00	435.00	277.00	378.00	480.00	578.00	158.00	135.00	230.00	489.00
13	375.00	598.00	461.00	580.00	455.00	629.00	448.00	601.00	414.00	616.00	506.00	614.00
14	480.00	550.00	507.00	523.00	513.00	544.00	456.00	592.00	421.00	549.00	432.00	556.00
15	412.00	544.00	389.00	464.00	479.00	575.00	459.00	623.00	399.00	492.00	446.00	590.00
16	309.00	327.00	225.00	258.00	244.00	257.00	249.00	218.00	197.00	251.00	211.00*	244.00*
17	*	*	*	*	*	*	*	*	*	*	*	*
18	372.00	480.00	466.00	584.00	311.00*	442.00*	527.00	609.00	471.00	640.00	454.00	561.00
19	302.00	313.00	335.00	328.00	334.00	331.00	369.00	391.00	307.00	388.00	316.00	433.00
20	338.00	468.00	383.00	480.00	388.00	467.00	368.00	454.00	468.00	608.00	496.00	576.00

TABLE 21. RAW DATA FOR *TRANS*-1,2-DICHLOROETHENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	9.32	10.70	7.01	10.20	8.71	11.80	4.06	7.35	10.60	11.00	13.40	8.94
2	8.78	9.99	7.23	8.84	8.44	10.60	7.00	8.53	6.23	8.65	6.69	8.09
3	8.24	10.30	6.27	7.86	7.16	8.39	4.25	4.17	3.69	6.30	5.24	4.23
4	6.40	8.72	7.70	10.10	7.55	9.32	3.17	4.19	8.57	10.70	7.36	8.87
5	2.64	3.68	6.89	9.42	12.00	10.60	8.46	11.40	11.20	15.40	22.10*	42.10*
6	6.43	7.50	6.43	8.25	6.50	8.42	8.14	10.20	7.64	10.30	8.14	10.00
7	11.30	13.00	9.69	10.10	9.61	10.70	10.30	11.80	10.30	10.80	10.50	12.20
8	27.50*	19.90	8.37	9.33	7.42	10.30	3.74	9.08	11.20*	19.30*	3.56	5.88
9	7.70	7.73	3.19	4.72	7.00	9.22	4.41	5.91	5.90	8.28	5.21	6.26
10	4.80	20.70	4.72	20.60*	1.09	22.80*	6.31	14.20	4.75	18.30	5.90	18.50
11	5.24	7.48	3.25	4.08	6.53	7.74	5.68	7.17	7.98	8.95	4.67	5.68
12	5.66	7.73	0.00*	0.00*	6.73	8.43	6.13	7.47	6.86	8.50	0.00*	0.00*
13	8.55	9.58	8.36	11.60	8.69	9.91	8.84	11.60	8.68	10.90	9.24	11.90
14	7.86	10.20	8.59	8.49	10.60	12.10	7.23	8.64	7.80	10.10	9.49	12.80
15	8.78	10.90	7.41	9.76	8.28	10.90	8.91	11.40	8.51	11.00	9.27	11.50
16	12.20	11.90	14.50	9.15	6.22	8.12	4.46	8.52	6.92	8.14	7.14	9.73
17	6.70	6.00	4.80	6.20	5.30	7.90	6.60	8.40	5.90	8.00	6.70	9.40
18	4.98	4.00	0.00*	0.00*	4.04	5.38	3.82*	4.96*	1.36	2.14	2.42	0.00*
19	6.78	9.29	6.86	12.20	8.24	9.97	11.60	13.40	11.30	11.40	13.00	12.60
20	6.51	7.92	0.11	0.11*	2.44	11.40	2.22	5.68	6.80	10.40	2.15	3.03

TABLE 21 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	61.90*	48.20	59.30	50.00	49.40	61.20	47.60	42.30	50.70	53.90	52.10	73.80
2	37.70	47.10	33.00	42.50	38.40	47.80	25.40	46.50	44.30	46.70	32.30	44.30
3	32.20	52.90	28.70	44.10	40.20	23.30	19.30	29.90	29.60	40.20	22.50	34.70
4	33.70	42.90	34.00	46.30	40.90	49.50	37.70	43.10	42.90	53.00	37.30	48.00
5	44.30	56.10	36.20	42.10	43.90	54.90	44.90	57.20	39.60	64.60	63.90*	71.70*
6	38.90	46.30	38.30	48.80	38.30	50.00	40.00	54.40	41.10	52.50	27.80	53.80
7	36.10	40.40	25.60	31.70	24.70	38.90	32.10	43.20	31.20	32.00	28.40	38.10
8	38.30	51.10	50.60	70.60	50.10	55.30	39.00	57.80	44.40*	68.10*	25.30	64.90
9	34.10	54.90	27.80	31.80	38.70	51.80	30.60	36.20	42.30	50.70	28.20	42.50
10	84.90*	103.80*	81.70*	93.90*	80.00*	86.90	113.00*	73.90	86.90*	110.00*	75.60	76.70
11	34.00	45.50	31.70	42.30	39.80	51.70	38.60	53.10	38.00	47.40	34.50	45.50
12	34.90	51.00	30.40	39.30	27.30	34.90	47.10	57.10	42.30	163.00*	34.60	50.30
13	40.20	53.60	43.00	51.40	44.80	48.30	31.90	58.40	46.00	51.40	40.40	102.00*
14	42.00	52.30	43.70	48.90	43.90	55.60	36.60	44.40	35.10	46.60	27.40	62.20
15	45.60	56.40	45.40	59.40	50.50	58.30	46.80	60.40	44.20	54.20	49.20	60.90
16	39.00	54.20	43.60	50.20	49.10	67.70	47.80	66.70	39.60	48.20	64.40	64.40
17	38.40	55.80	29.70	58.80	43.00	61.00	50.00	53.00	38.00	56.00	42.00	53.00
18	40.60	49.40	0.00*	0.00*	33.10	43.40	12.50*	32.00*	36.80	47.50	52.30	45.90
19	40.20	61.40	52.40	67.40	42.60	56.60	60.80	66.00	56.80	56.60	57.20	75.00
20	34.10	43.80	62.80	48.50	42.30	49.80	56.40	70.10	46.60	56.30	37.70	52.30

TABLE 21 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00
LAB NUMBER												
1	376.00	547.00	359.00	578.00	490.00	576.00	310.00	369.00	454.00	484.00	235.00	366.00
2	348.00	452.00	344.00	447.00	366.00	478.00	368.00	458.00	385.00	477.00	356.00	430.00
3	388.00	498.00	408.00	423.00	421.00	458.00	373.00	417.00	380.00	470.00	337.00	413.00
4	384.00	462.00	379.00	465.00	407.00	475.00	415.00	487.00	423.00	516.00	380.00	493.00
5	380.00	513.00	337.00	417.00	311.00	500.00	443.00	714.00	443.00	530.00	455.00*	660.00*
6	400.00	121.00	433.00	138.00	398.00	225.00	414.00	250.00	398.00	257.00	413.00	257.00
7	541.00	743.00	526.00	646.00	560.00	727.00	573.00	645.00	757.00*	726.00	539.00	621.00
8	385.00	451.00	386.00	473.00	501.00	643.00	370.00	471.00	570.00*	737.00*	691.00	582.00
9	510.00	591.00	414.00	539.00	459.00	624.00	477.00	648.00	460.00	613.00	509.00	565.00
10	468.00	501.00	460.00	580.00	434.00	508.00	438.00	521.00	491.00	510.00	397.00	485.00
11	367.00	494.00	394.00	460.00	403.00	521.00	362.00	518.00	388.00	549.00	378.00	472.00
12	314.00	401.00	358.00	508.00	330.00	404.00	358.00	454.00	316.00	425.00	362.00	437.00
13	341.00	483.00	392.00	520.00	413.00	495.00	401.00	490.00	371.00	516.00	432.00	496.00
14	366.00	398.00	390.00	375.00	378.00	394.00	318.00	452.00	312.00	402.00	309.00	402.00
15	400.00	583.00	333.00	485.00	479.00	583.00	385.00	605.00	368.00	599.00	395.00	606.00
16	200.00	219.00	199.00	210.00	220.00	228.00	195.00	195.00	197.00*	239.00	198.00	215.00
17	372.00	410.00	401.00	426.00	341.00	387.00	352.00	385.00	367.00	399.00	357.00	375.00
18	490.00	566.00	258.00*	333.00*	437.00	602.00	259.00*	409.00*	446.00	532.00	570.00	759.00
19	325.00	340.00	354.00	351.00	389.00	384.00	383.00	413.00	343.00	417.00	343.00	438.00
20	381.00	485.00	617.00	762.00	478.00	620.00	563.00	670.00	362.00	400.00	548.00	675.00

TABLE 22. RAW DATA FOR 1,1,1-TRICHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.05	9.69	7.23	9.03	7.89	10.00	5.62	7.87	7.43	6.79	15.20*	14.70
2	7.92	8.79	7.00	8.16	7.26	9.00	5.83	6.41	3.21*	5.50*	6.30	6.79
3	8.57	10.30	7.23	9.56	7.38	8.71	0.34	5.51	6.49	9.14	7.46	6.12
4	7.49	9.08	8.51	11.00	7.37	9.42	5.29	7.14	6.54	9.44	7.91	10.10
5	4.99	4.92	3.28*	6.47*	6.50	8.86	14.20	7.98	6.12	9.88	0.00*	9.77
6	6.50	7.36	6.63	7.97	6.50	8.38	9.09	9.69	11.00	12.80	6.17	6.27
7	8.16	8.82	6.59	7.43	6.95	7.93	10.60	5.44	5.08	5.89	7.29	5.39
8	24.20*	18.50*	10.00	10.70	8.28	10.90	5.79	14.40	8.68	16.40	4.51	9.15
9	3.38	4.02	8.20	11.00	6.16	8.28	7.71	11.90	6.45	8.51	6.88	11.60
10	7.03	26.80*	4.62	24.10*	9.00*	27.40*	9.00	27.00*	5.71	23.00*	9.35	22.30
11	6.10	7.69	6.42	9.23	6.99	7.83	7.36	8.86	9.98	9.38	5.64	8.75
12	6.34	8.46	7.20	8.68	4.56*	6.27*	6.34	11.20	6.36	8.59	35.00*	32.20
13	10.40	5.87	10.10	7.80	9.57	6.90	68.00*	2.68	13.70	4.20	5.42	23.20
14	7.26	9.66	6.88	7.46	8.59	9.69	6.29	1.30	6.80	8.30	7.80	9.80
15	7.48	9.14	6.88	8.51	7.50	9.41	5.11	7.56	7.50	9.41	6.15	7.35
16	16.80*	14.80	13.40*	7.43	5.87	8.76	3.85	7.77	5.21	0.00*	6.82	17.30
17	6.10	6.50	5.30	6.80	5.50	7.50	6.80	9.00	5.70	6.60	6.60	10.00
18	2.53*	9.39*	10.60	16.20*	8.12	13.00	0.00*	0.00*	5.60	16.80	0.00*	0.00*
19	8.72	11.80	7.88	14.70*	8.66	12.40	13.00	16.70	12.90	12.00	12.80*	22.40
20	7.97*	9.71*	7.09	8.90	8.13	9.55	12.30*	20.10*	8.60	10.10	5.83	25.00

TABLE 22 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	40.70	47.80	50.90	52.80	45.00	53.60	41.50	39.50	37.90	39.10	55.80	85.80
2	36.00	45.90	32.10	42.60	35.60	43.50	12.00	52.10	13.70*	37.20*	34.80	29.20
3	24.90	57.50	35.90	52.30	38.70	24.90	25.90	32.70	32.70	41.00	45.60	39.10
4	38.00	47.20	38.30	51.60	43.80	50.60	44.70	51.80	44.50	53.60	63.90	76.60
5	41.50	51.70	30.30*	36.30*	41.70	44.50	40.40	51.10	29.80	41.20	31.00	44.70
6	36.70	44.20	37.10	45.30	37.10	47.40	37.20	49.30	41.90	53.70	26.00	48.30
7	33.60	43.40	29.20	35.00	29.90	45.90	31.70	35.30	20.80	30.00	40.00	55.10
8	36.00	46.40	51.60	64.50	43.80	48.70	42.00	61.40	32.10	49.50	29.10	61.60
9	33.40	47.60	39.30	42.50	34.70	40.80	39.60	46.90	43.70	49.90	39.90	63.80
10	94.50*	93.20*	93.30*	108.00*	88.10*	97.70*	91.60*	83.10	117.00*	121.00*	90.50	195.00*
11	30.80	52.80	41.20	52.80	44.20	51.40	39.40	62.30	38.40	48.60	48.50	64.20
12	42.60	42.60	31.60	41.00	34.60*	31.00*	34.90	54.50	30.00	36.90	39.90	40.90
13	38.40	53.60	41.80	54.00	43.90	44.40	25.80	55.50	44.60	53.10	43.10	48.30
14	36.50	56.00	40.10	51.80	39.80	53.30	28.20	28.40	36.20	45.00	35.80	50.10
15	33.60	41.40	34.40	43.80	31.90	39.80	30.10	40.90	31.91	39.80	31.00	37.90
16	41.20	50.90	42.80	56.20	44.90	64.90	51.20	67.80	44.60	46.80	59.30	65.30
17	37.40	52.40	39.00	50.00	42.00	49.60	53.00	57.40	38.30	50.30	81.60	95.60
18	4.64*	9.28*	13.50	10.80*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
19	45.00	65.20	59.70	73.20	54.70	60.80	69.30	78.90	60.90	55.80	54.20	129.00
20	44.40*	59.20*	36.10	48.70	42.40	51.30	59.40*	86.20*	44.40	50.30	71.80	103.00

TABLE 22 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
LAB NUMBER												
1	367.00	542.00	320.00	576.00	418.00	562.00	202.00	265.00	431.00	440.00	394.00	667.00
2	324.00	384.00	326.00	398.00	329.00	392.00	264.00	308.00	283.00*	332.00*	315.00	389.00
3	343.00	413.00	415.00	430.00	371.00	382.00	330.00	355.00	387.00	406.00	361.00	404.00
4	372.00	437.00	369.00	447.00	399.00	451.00	415.00	467.00	412.00	492.00	430.00	518.00
5	319.00	325.00	275.00*	389.00*	253.00	286.00	379.00	462.00	283.00	339.00	242.00	315.00
6	386.00	112.00	390.00	116.00	382.00	120.00	398.00	131.00	384.00	141.00	406.00	137.00
7	508.00	591.00	435.00	548.00	451.00	510.00	477.00	471.00	472.00	527.00	535.00	488.00
8	301.00	332.00	281.00	326.00	368.00	434.00	316.00	357.00	427.00	530.00	569.00	441.00
9	458.00	527.00	462.00	529.00	464.00	551.00	500.00	606.00	467.00	576.00	552.00	610.00
10	490.00	485.00	438.00	493.00	453.00*	485.00*	462.00	472.00	531.00	479.00	520.00	475.00
11	446.00	594.00	430.00	548.00	468.00	633.00	509.00	677.00	433.00	565.00	508.00	662.00
12	306.00	357.00	266.00	405.00	294.00*	357.00*	374.00	443.00	295.00	372.00	363.00	433.00
13	325.00	427.00	382.00	534.00	392.00	444.00	380.00	444.00	360.00	486.00	402.00	510.00
14	337.00	359.00	352.00	327.00	347.00	358.00	251.00	318.00	239.00	359.00	315.00	374.00
15	436.00	495.00	395.00	454.00	407.00	495.00	433.00	489.00	407.00	496.00	437.00	481.00
16	179.00	191.00	177.00	182.00	189.00	200.00	166.00	178.00	178.00	196.00	180.00	207.00
17	309.00	343.00	320.00	339.00	288.00	325.00	311.00	333.00	311.00	325.00	392.00	404.00
18	0.00*	0.00*	21.70*	10.80	0.00*	0.00*	466.00	704.00	0.00*	0.00*	0.00*	0.00*
19	343.00	351.00	379.00	368.00	410.00	395.00	405.00	436.00	375.00	427.00	372.00	477.00
20	538.00*	648.00*	497.00	593.00	477.00	608.00	524.00*	725.00*	498.00	536.00	540.00	641.00

TABLE 23. RAW DATA FOR TRICHLOROETHENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.58	7.80	7.24	7.39	8.38	11.30	9.02	12.20	10.50	10.90	13.40	14.80
2	7.77	9.52	7.21	9.08	7.38	9.70	5.44	6.74	5.60	7.39	6.41	8.41
3	6.74	8.75	6.99	8.65	5.98	7.19	11.00	0.22	4.47	6.66	0.00*	0.00*
4	7.46	9.40	8.74	11.50	7.51	9.46	9.62	11.80	8.38	10.90	9.13	10.80
5	*	*	*	*	*	*	*	*	*	*	*	*
6	8.83	8.09	7.26	8.65	6.75	9.55	15.70	16.60	8.83	10.00	8.98	13.60
7	9.30	11.10	8.27	10.10	7.90	9.56	9.58	5.78	5.11	6.84	7.45	6.65
8	26.90*	19.60*	10.70	12.40	8.36	10.90	0.87	8.03	8.05	11.50	5.34	28.40*
9	7.12	6.61	7.49	10.60	5.96	7.55	9.42	12.40	6.08	7.97	9.93	12.10
10	5.52	5.13	5.49	5.84	4.32*	1.79*	9.90	6.10	4.10	30.60*	4.38	5.06
11	4.32	6.56	4.93	6.27	5.30	6.13	6.25	6.48	5.60	6.25	5.80	6.83
12	22.90*	34.10*	25.80*	26.20*	2.50	5.20	24.30*	34.90*	25.40*	36.60*	29.30*	38.70*
13	8.99	9.67	9.20	11.40	9.31	9.78	4.91	12.20	7.30	11.00	9.36	15.20
14	8.24	10.40	8.22	9.89	8.83	11.20	9.07	9.77	7.67	9.52	7.31	9.86
15	7.46	9.32	6.66	8.36	7.51	9.39	6.73	9.23	7.51	9.90	8.17	9.78
16	13.30	12.00	19.00*	10.10	6.67	8.64	4.13	6.18	6.12*	0.39*	9.01	12.60
17	6.80	10.20	5.90	8.50	6.78	8.48	8.47	12.80	6.00	7.70	8.50	11.00
18	1.47	1.36*	4.72	6.61	3.04	4.70	4.51	5.01	13.10	15.00	3.68	8.18
19	7.47	11.20	7.47	15.90	8.35	12.90	10.30	15.10	12.90	10.80	14.60	7.00
20	10.20*	10.80*	4.51	5.09	6.13	9.52	11.70*	30.80*	9.50*	13.50*	11.00*	16.90*

TABLE 23 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
LAB NUMBER												
1	236.00	285.00	234.00	308.00	256.00	284.00	*	*	576.00	504.00	264.00	*
2	362.00	461.00	366.00	471.00	375.00	484.00	382.00	461.00	382.00	456.00	368.00	452.00
3	301.00	372.00	363.00	375.00	323.00	359.00	304.00	353.00	297.00	379.00	297.00*	350.00*
4	388.00	475.00	388.00	482.00	419.00	483.00	434.00	511.00	430.00	517.00	423.00	528.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	342.00	112.00	308.00	111.00	305.00	125.00	276.00	134.00	306.00	139.00	300.00	143.00
7	437.00	487.00	498.00	511.00	415.00	474.00	417.00	484.00	392.00	402.00	401.00	440.00
8	321.00	381.00	321.00	369.00	394.00	461.00	322.00	409.00	460.00	580.00	549.00	454.00
9	537.00	622.00	487.00	622.00	457.00	613.00	518.00	693.00	463.00	609.00	524.00	596.00
10	200.00	200.00	165.00	225.00	198.00*	173.00*	179.00	212.00	256.00	193.00	205.00	200.00
11	344.00	461.00	371.00	454.00	380.00	481.00	357.00	499.00	362.00	510.00	359.00	480.00
12	108.00	1200.00*	777.00*	1360.00*	1270.00*	1220.00	1270.00*	417.00*	830.00*	1180.00*	1140.00*	1400.00*
13	331.00	492.00	395.00	489.00	401.00	469.00	390.00	478.00	381.00	506.00	434.00	514.00
14	391.00	420.00	405.00	420.00	415.00	422.00	343.00	439.00	350.00	421.00	328.00	409.00
15	373.00	510.00	333.00	426.00	354.00	509.00	362.00	520.00	347.00	513.00	379.00	503.00
16	147.00	155.00	150.00	159.00	156.00	156.00	144.00	0.00*	0.00*	157.00*	151.00	161.00
17	198.00	228.00	201.00	162.00	119.00	295.00	276.00	306.00	278.00	292.00	293.00	293.00
18	440.00	490.00	363.00	428.00	383.00	490.00	343.00	460.00	594.00	726.00	420.00	514.00
19	390.00	427.00	460.00	455.00	465.00	464.00	469.00	520.00	413.00	504.00	407.00	553.00
20	652.00*	857.00*	653.00	892.00	969.00*	1200.00	911.00*	1050.00*	556.00*	668.00*	645.00*	802.00*

TABLE 23 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	72.60	74.70	72.70	75.40	59.00	74.70	60.40	*	83.40	65.50	*	*
2	78.50	96.70	72.90	92.40	79.10	97.20	55.40	94.50	76.40	94.50	73.80	94.90
3	67.40	103.00	71.30	95.70	62.90	42.00	58.10	67.80	56.10	74.00	41.40*	66.90*
4	76.60	96.40	76.10	103.00	87.40	106.00	89.30	102.00	87.50	106.00	85.90	107.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	71.00	83.40	74.50	89.50	72.90	90.80	73.70	93.40	68.20	84.70	55.70	86.20
7	73.50	97.40	74.90	90.00	76.60	112.00	62.90	99.00	69.60	66.70	64.80	129.00
8	74.90	99.10	98.70	99.90	92.70	103.00	80.20	114.00	68.10	140.00	56.50	127.00
9	66.20	106.00	81.70	110.00	73.40	110.00	93.80	112.00	88.00	101.00	80.30	125.00
10	91.40	98.40	102.00	105.00	76.50*	86.10*	75.20	82.60	106.00	110.00	87.30	94.00
11	74.30	94.40	77.80	101.00	81.60	107.00	82.70	111.00	80.90	96.10	84.40	103.00
12	84.40	196.00*	123.00*	160.00*	251.00*	186.00	259.00*	327.00*	76.50*	111.00*	132.00*	202.00*
13	80.00	96.10	80.80	99.00	86.60	95.00	73.30	108.00	86.00	99.70	87.40	105.00
14	82.40	110.00	83.80	108.00	89.10	89.20	78.80	92.10	79.90	102.00	80.10	105.00
15	78.10	97.80	78.90	98.50	77.50	98.50	84.50	101.00	75.20	95.20	84.10	100.00
16	72.00	85.50	0.00*	93.50	77.40	95.50	85.90	99.80	0.00*	0.00*	93.80	102.00
17	66.00	72.00	55.10	77.10	67.80	107.00	45.80	71.20	72.90	72.00	48.20	76.30
18	40.20*	48.20*	37.60	42.60	31.90	42.90	37.40	46.50	55.50	58.90	48.30	52.70
19	86.80	125.00	115.00	142.00	112.00	109.00	130.00	151.00	118.00	107.00	120.00	155.00
20	132.00*	159.00*	101.00	148.00	161.00*	196.00	209.00*	281.00*	148.00*	185.00*	152.00*	250.00*

TABLE 24. RAW DATA FOR DIBROMOCHLOROMETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	14.30	12.10	15.50	11.90	17.50*	15.70*	11.20	13.20	15.00	10.40	19.30	17.20
2	11.30	9.29	10.60	8.71	10.90	9.26	8.04	8.46	8.23	6.23	10.10	14.10
3	11.20	9.68	10.40	8.36	0.64	8.18	19.80	1.11	7.41	7.71	8.35	7.50
4	13.40	11.70	16.60	15.40	10.70	9.56	13.00	10.70	14.80	12.70	14.60	12.00
5	6.20	5.11	13.80	13.60	10.80	6.70	13.70	10.30	11.10	8.86	9.03	7.63
6	12.30	8.10	12.10	9.00	12.00	10.30	13.20	13.30	12.50	7.24	17.20	20.70
7	27.10	26.50*	61.10*	11.20	25.30	25.20*	27.40	17.40	29.00	29.00*	24.00	21.00
8	49.20*	22.40*	40.60*	12.10	13.50	11.80	8.87	16.10	22.90	20.40	8.83	11.20
9	12.80	5.98	14.70	23.30*	12.00	8.86	14.50*	13.20*	10.30	8.92	13.30	10.40
10	1.95*	0.76*	2.32*	1.14*	4.95*	8.35*	1.75*	1.18*	2.01*	3.65*	2.11*	9.20*
11	4.96	4.87	7.20	4.20	6.44	5.14	6.94	3.62	6.45	4.86	7.16	5.07
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	14.80	9.37	19.60	10.70	16.90	9.26	13.80	4.56	13.60	9.73	15.10	7.03
14	10.90	8.90	12.60	7.96	11.80	9.47	8.94	6.58	10.50	7.39	9.92	9.12
15	12.70	10.70	12.80	10.80	12.40	10.90	11.30	9.46	12.10	15.10	12.40	10.00
16	27.10	14.60	21.20	8.67	7.21	2.59	0.44	3.16	10.40	7.03	12.40	13.10
17	8.70	6.60	8.20	6.70	7.70	6.40	11.00	10.30	7.80	6.80	16.00	13.20
18	6.23	4.65	7.43	7.90	4.87	4.95	8.19	7.39	9.08	9.67	8.80	7.22
19	5.89	6.13	5.81	7.60	5.31	6.10	8.25	8.15	23.80	0.10	13.90	0.00*
20	14.80*	13.90*	13.10*	12.40*	13.20*	11.60*	22.20*	22.20*	13.40*	11.30*	23.50*	20.40*

TABLE 24 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00
LAB NUMBER												
1	99.40	108.00	99.40	108.00	118.00*	136.00*	71.60	*	93.00	116.00	*	*
2	78.30	97.80	70.40	95.20	74.70	99.90	49.00	94.20	66.10	96.10	71.30	92.70
3	66.60	113.00	64.90	99.00	60.30	42.90	61.30	70.70	54.00	75.00	31.40	51.70
4	74.80	111.00	78.70	122.00	86.50	114.00	87.10	107.00	77.90	109.00	86.10	120.00
5	69.50	89.30	78.00	91.10	63.30	87.70	68.50	83.80	78.30	96.80	98.90	113.00
6	49.10	71.10	48.20	68.00	49.60	73.30	47.90	70.10	38.30	65.60	34.80	73.30
7	77.20	99.40	75.50	90.50	74.90	99.10	65.70	87.50	81.50	75.30	73.90	124.00
8	85.80	118.00	126.00	165.00	101.00	119.00	86.70	132.00	105.00	151.00	68.30	149.00
9	86.30	142.00	12.90*	148.00	95.80	139.00	106.00*	144.00*	105.00	127.00	91.50	152.00
10	38.30*	40.40*	44.00*	47.90*	43.40*	32.80*	44.60*	31.40*	33.90*	50.30*	42.90*	36.00*
11	93.60	109.00	91.30	128.00	86.90	129.00	87.00	126.00	90.10	104.00	90.50	118.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	84.20	101.00	67.20	109.00	89.60	95.40	76.10	104.00	91.80	97.00	81.90	99.20
14	80.30	116.00	75.80	109.00	83.80	94.50	76.10	99.90	74.30	99.70	78.40	107.00
15	68.70	89.30	71.60	94.50	69.20	91.90	69.80	88.50	72.70	88.70	77.10	90.20
16	87.80	110.00	95.30	135.00	88.00	130.00	99.60	142.00	102.00	128.00	131.00	144.00
17	89.50	122.00	95.00	138.00	82.00	133.00	93.70	112.00	95.00	124.00	111.00	141.00
18	97.50	118.00	89.50	105.00	75.50	98.60	89.40	110.00	108.00	130.00	89.90	115.00
19	55.20	83.80	70.80	80.00	68.80	68.50	75.20	97.10	66.10	68.50	67.80	91.50
20	142.00*	197.00*	110.00*	152.00*	109.00*	146.00*	126.00*	143.00*	113.00*	151.00*	115.00*	203.00*

TABLE 24 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
LAB NUMBER												
1	447.00	784.00	442.00	696.00	470.00*	791.00*	*	*	454.00	492.00	420.00	*
2	374.00	444.00	366.00	456.00	373.00	486.00	363.00	440.00	360.00	428.00	347.00	449.00
3	283.00	356.00	354.00	363.00	300.00	345.00	276.00	317.00	257.00	359.00	260.00	373.00
4	414.00	516.00	421.00	524.00	435.00	515.00	439.00	497.00	450.00	545.00	439.00	536.00
5	344.00	431.00	355.00	421.00	308.00	399.00	349.00	430.00	321.00	369.00	303.00	353.00
6	142.00	98.30	139.00*	102.00	139.00	97.50	148.00*	116.00*	137.00	107.00	141.00	120.00
7	414.00	495.00	441.00	475.00	402.00	507.00	396.00	483.00	435.00	405.00	384.00	396.00
8	347.00	441.00	386.00	446.00	395.00	332.00	402.00	529.00	338.00	644.00	679.00	587.00
9	602.00	693.00	578.00	743.00	541.00	708.00	568.00*	763.00*	536.00	674.00	586.00	670.00
10	94.00*	94.00*	106.00*	120.00*	96.00*	110.00*	84.60*	107.00*	110.00*	103.00*	93.00*	98.00*
11	386.00	576.00	473.00	544.00	468.00	575.00	408.00	570.00	453.00	634.00	437.00	567.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	345.00	512.00	391.00	511.00	427.00	501.00	394.00	463.00	389.00	562.00	433.00	549.00
14	402.00	416.00	402.00	423.00	405.00	434.00	358.00	449.00	347.00	426.00	345.00	422.00
15	337.00	415.00	329.00	385.00	330.00	426.00	320.00	409.00	326.00	418.00	329.00	412.00
16	344.00	395.00	350.00	376.00	360.00	386.00	334.00	419.00	385.00	397.00	351.00	404.00
17	444.00	504.00	494.00	472.00	352.00	433.00	398.00	456.00	459.00	540.00	448.00	531.00
18	480.00	562.00	414.00	531.00	402.00	551.00	429.00	566.00	527.00	671.00	454.00	568.00
19	244.00	260.00	309.00	295.00	332.00	323.00	326.00	426.00	261.00	414.00	260.00	522.00
20	803.00*	876.00*	601.00*	690.00*	605.00*	750.00*	605.00*	753.00*	696.00*	787.00*	640.00*	763.00*

TABLE 25. RAW DATA FOR 2-CHLOROETHYLVINYL ETHER ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.88	9.28	8.06	9.05	7.91	8.73	15.10	14.90	12.10	11.10	44.50*	38.60*
2	7.10	8.57	0.75	2.16	7.37	8.93	4.61	5.57	5.06	6.75	5.97	8.49
3	3.15	4.34	8.32	9.40	1.13	5.11	8.35	9.50	3.42	5.09	30.60*	31.90*
4	7.11	8.20	4.27	1.90	6.70	8.61	4.54	6.26	6.98	8.52	6.09	7.22
5	9.53	21.20	4.83	3.63	8.89	9.38	7.45	8.81	6.68	7.22	6.46	13.10
6	7.38	7.14	7.05	8.16	6.89	8.78	8.03	12.00	7.54	0.20	8.52	2.40
7	11.50	23.90	0.00*	0.00*	17.60*	19.60*	9.80	19.20	9.90	21.80*	8.61	8.99
8	31.60*	23.00	1.84	7.22	7.26	9.90	4.33	4.76	46.20*	37.40*	2.68	9.78
9	9.71	7.08	13.00	13.90	9.53	10.10	13.60	17.10	5.31	7.22	5.68	6.53
10	0.09	4.64	0.00*	4.92	0.00*	1.25	0.00*	3.90	0.00*	5.23	0.00*	0.17
11	5.88	8.92	8.82	10.90	8.74	9.69	7.80	9.33	8.13	8.21	7.51	9.25
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	7.29	10.70	8.31	6.34	23.10*	9.20	7.97	8.27	4.13	8.13	101.00*	9.45
14	7.17	9.54	7.58	8.11	8.15	8.01	7.24	7.47	8.59	9.14	8.04	10.40
15	8.58	10.10	6.98	8.43	6.78	8.73	7.37	8.91	6.99	9.47	7.59	8.76
16	0.00*	27.10	0.00*	0.00*	7.90	2.28	0.00*	3.57	20.00*	0.00*	19.10*	16.80
17	3.70	5.70	0.00*	0.00*	4.00	5.30	6.80	11.00	4.90	5.20	7.40	9.40
18	150.00*	133.00*	7.00	14.00	3.00	7.00	0.00*	0.00*	5.60	0.00*	4.64	4.37
19	0.00*	0.00*	0.00*	0.00*	0.00*	0.19	0.00*	16.40	10.40	5.50	10.00	0.82
20	10.10	11.20	8.78	12.30	8.55	10.30	6.67	8.90	10.80	11.60	11.70	11.30

TABLE 25 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	78.60	93.00	80.30	85.70	66.20	74.40	102.00	85.70	58.40	0.00*	111.00	51.90
2	69.70	84.10	44.40	20.70	69.90	87.90	56.60	85.30	65.20	88.40	73.40	87.30
3	52.50	82.90	90.60	70.50	52.70	35.30	48.20	60.10	49.20	60.30	40.80	68.30
4	36.00	0.00*	16.00	0.00*	20.30	0.00*	24.10	0.00*	20.50	0.00*	20.60	0.00*
5	57.70	71.20	66.70	12.30	74.20	57.50	87.70	45.90	91.80	34.80	76.10	4.89
6	76.00	97.10	77.30	88.60	74.70	92.90	82.70	92.90	66.70	82.90	45.30	91.40
7	69.00	120.00	30.60	101.00	55.20	130.00	70.40	103.00	79.60	68.40	69.90	105.00
8	73.40	138.00	83.20	52.60	92.40	106.00	88.00	131.00	114.00	61.60	79.40	82.20
9	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
10	195.30*	0.00*	428.00*	5.90	129.00	2.70	36.40	2.30	26.50	0.00*	65.70	0.00*
11	77.60	97.90	72.30	103.00	86.10	109.00	84.80	106.00	81.80	98.00	85.60	92.70
12	0.00*	75.60*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	12.70	0.00*	4.74	0.00*	7.09	0.00*	0.00*	0.00*	50.10	0.00*	1.38	0.00*
14	77.20	108.00	71.50	94.40	71.30	92.70	85.20	105.00	79.60	104.00	92.70	137.00
15	72.20	87.20	69.30	85.60	65.80	81.60	74.60	88.20	67.60	80.60	69.50	84.40
16	109.00	63.30	39.90	86.10	41.30	135.00	92.60	141.00	236.00*	111.00	194.00*	169.00
17	80.60	106.00	55.00	83.00	90.00	118.00	123.00	187.00	91.00	122.00	123.00	190.00
18	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
19	0.00*	63.30*	0.00*	77.20	0.00*	65.40	134.00	170.00	73.20	65.40	72.60	84.00
20	100.00	112.00	87.90	113.00	102.00	130.00	85.50	129.00	0.00*	130.00	0.00*	31.40

TABLE 25 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00
LAB NUMBER												
1	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	267.00	0.00*	0.00*	0.00*	0.00*
2	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
3	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
4	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
5	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
6	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
7	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
8	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
9	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
10	0.00*	0.00*	0.00*	0.00*	0.00*	1.27*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	0.00*	0.00*	16.00*	0.00*	0.00*	0.00*	5.13*	0.00*	0.00*	2.79*	4.84*	0.00*
14	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
15	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
16	0.00*	0.00*	0.00*	84.10*	0.00*	0.00*	0.00*	144.00	0.00*	0.00*	0.00*	0.00*
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
19	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	59.00*	71.00	0.00*	0.00*	0.00*	0.00*
20	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*

TABLE 26. RAW DATA FOR TETRACHLOROETHENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.04	9.92	7.98	9.60	8.32	11.20	0.00*	3.48	10.10	10.80	11.80	10.20
2	7.12	9.32	6.77	8.22	6.91	9.03	9.64	6.00	6.35	8.33	6.05	7.41
3	8.35	11.50	9.31	11.40	7.97	9.07	0.00*	0.00*	6.54	9.54	9.16	8.15
4	6.85	8.49	7.83	10.60	7.34	9.48	2.60	1.50	7.71	10.50	9.49	11.20
5	1.20	2.00	10.90	9.33	3.29	11.40	129.00*	0.00*	11.40	10.20	0.00*	27.60*
6	7.07	7.99	7.29	8.74	7.18	9.08	4.60	15.40	8.09	7.18	8.51	8.27
7	17.30	18.10	17.10*	18.30	17.00*	17.70	18.50	9.70	15.10	15.30	16.30	16.00
8	29.00*	28.30*	8.66	20.10	8.59	10.10	4.80	27.50*	5.29	7.30	12.50	5.19
9	8.35	8.14	7.40	10.70	7.72	8.72	8.57	11.90	6.13	8.61	8.79	11.60
10	3.31	10.86	3.28	14.40	5.21	12.30	3.04	9.21	3.42	8.75	3.27	12.00
11	3.93	2.83	3.90	1.77	5.29	2.91	0.00*	0.00*	5.94	6.07	5.83	6.63
12	31.50*	43.10*	39.00*	45.20*	0.00*	0.00*	15.00	45.00*	27.50*	36.20*	39.80*	53.40*
13	10.70	9.59	10.20	11.50	10.00	10.20	0.00*	2.17	6.07	10.30	10.00	12.50
14	8.07	10.70	7.53	9.82	9.18	11.30	2.40	4.60	7.26	8.83	9.16	11.80
15	6.59	8.03	4.90*	6.40*	6.42	6.17	0.00*	0.00*	3.70*	4.71*	3.24*	4.13*
16	15.80	13.30	19.60*	8.90	3.64	9.04	0.00*	0.00*	6.94	3.89	6.83	10.10
17	7.04	7.30	5.40	6.80	7.90	8.00	0.00*	0.00*	6.80	8.00	7.80	12.50
18	4.73	4.09	7.00	9.80	3.50	4.70	0.00*	0.00*	4.67	7.23	3.98	4.82
19	7.20	11.00	9.21	14.00	6.86	11.20	6.30	9.50	13.50	9.20	16.40	19.00
20	8.23	9.19	6.99	7.77	6.21	8.78	10.90*	22.10*	8.65	12.00	9.20	10.10

TABLE 26 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	80.80	103.00	82.50	108.00	95.20	110.00	12.30	21.00	88.40	108.00	93.80	100.00
2	73.50	88.50	70.60	87.40	71.60	92.10	72.40	95.40	84.80	89.50	66.50	77.70
3	83.50	124.00	117.00	109.00	75.20	49.90*	38.90	73.00	72.80	85.90	64.30	94.70
4	72.30	91.10	75.30	97.30	83.50	99.40	77.00	90.00	83.20	103.00	87.20	105.00
5	68.30	102.00	159.00*	125.00	72.90	110.00	177.00*	50.70	95.20	146.00	134.00	220.00*
6	74.20	85.00	75.30	91.70	75.70	93.20	78.20	77.20	76.90	88.20	54.10	92.10
7	89.60	108.00	71.70	93.50	76.50	121.00	100.00	97.30	61.20	81.20	72.00	91.80
8	73.10	95.90	78.10	99.40	83.80	97.30	82.30	102.00	62.90	94.20	41.00	94.30
9	73.30	114.00	81.90	112.00	79.80	112.00	90.90	110.00	89.20	103.00	85.10	121.00
10	69.50	78.60	85.40	97.80	65.40	71.10	81.60	99.00	73.50	53.90	66.90	74.70
11	78.40	101.00	81.40	103.00	88.80	110.00	76.60	95.60	86.40	106.00	86.00	104.00
12	80.90	0.00*	50.30	64.60	373.00*	94.00	0.00*	248.00*	23.70*	33.70	69.60*	133.00*
13	79.50	107.00	83.30	109.00	86.70	96.90	53.40	80.40	84.30	113.00	91.00	106.00
14	81.30	110.00	81.00	107.00	88.70	106.00	72.30	87.30	82.20	98.70	81.80	106.00
15	73.20	85.80	68.50*	84.50*	65.00	80.00	64.50	78.50	53.30*	69.70*	60.10*	73.60*
16	78.10	89.60	81.20	93.20	78.30	95.40	60.50	66.50	64.60	74.60	90.40	102.00
17	100.00*	110.00	82.70	104.00	91.00	111.00	58.40	49.40	102.00	125.00	118.00	147.00
18	80.00	95.00	90.70	103.00	59.10	75.80	0.00*	0.00*	103.00	122.00	80.50	95.10
19	78.60	117.00	112.00	142.00	81.10	101.00	122.00	132.00	80.40	101.00	119.00	149.00
20	86.50	103.00	82.50	118.00	85.80	107.00	117.00*	144.00*	86.90	135.00	95.00	119.00

TABLE 26 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
LAB NUMBER												
1	384.00	690.00	325.00	719.00	461.00	712.00	661.00	99.00	661.00	436.00	340.00	367.00
2	331.00	448.00	346.00	456.00	345.00	460.00	363.00	453.00	364.00	467.00	341.00	429.00
3	367.00	462.00	434.00	480.00	599.00	444.00	338.00	417.00	191.00	480.00	382.00	454.00
4	381.00	475.00	379.00	477.00	413.00	497.00	406.00	490.00	423.00	510.00	429.00	535.00
5	401.00	557.00	312.00	327.00	289.00	497.00	327.00	627.00	332.00	357.00	440.00	519.00
6	401.00	104.00	397.00	104.00	393.00	122.00	382.00	110.00	387.00	138.00	396.00	141.00
7	375.00	435.00	349.00	454.00	375.00	424.00	372.00	385.00	350.00	395.00	370.00	407.00
8	297.00	376.00	326.00	366.00	389.00	464.00	318.00	423.00	447.00	607.00	554.00	452.00
9	491.00	604.00	449.00	597.00	434.00	571.00	473.00	662.00	438.00	586.00	475.00	568.00
10	168.00	171.00	135.00	246.00	148.00	183.00	145.00	192.00	178.00	183.00	168.00	183.00
11	319.00	456.00	355.00	425.00	373.00	477.00	313.00	467.00	353.00	514.00	341.00	474.00
12	607.00	603.00	340.00	702.00	488.00	665.00	1050.00*	1300.00*	347.00	586.00	989.00*	1600.00*
13	310.00	490.00	408.00	466.00	394.00	485.00	358.00	464.00	344.00	529.00	424.00	523.00
14	387.00	421.00	413.00	429.00	412.00	428.00	350.00	453.00	364.00	433.00	337.00	450.00
15	366.00	473.00	312.00*	390.00*	322.00	448.00	345.00	482.00	313.00*	448.00*	329.00*	449.00*
16	165.00	171.00	154.00	167.00	157.00	168.00	104.00	105.00	141.00	171.00	154.00	166.00
17	391.00	428.00	419.00	395.00	356.00	401.00	291.00	338.00	426.00	465.00	449.00	502.00
18	376.00	460.00	398.00	489.00	311.00	448.00	135.00*	226.00*	475.00	628.00	354.00	489.00
19	400.00	442.00	509.00	286.00	511.00	532.00	518.00	721.00	439.00	642.00	0.00*	0.00*
20	416.00	479.00	467.00	629.00	525.00	643.00	477.00*	602.00*	389.00	488.00	454.00	582.00

TABLE 27. RAW DATA FOR 1,2-DICHLOROBENZENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	16.40	10.70	15.90	10.00	7.21	10.30	5.80	*	9.78	*	12.70	13.80
2	6.01	8.78	6.11	7.77	6.18	8.35	7.23	8.56	5.33	7.51	6.87	8.90
3	6.71	8.64	6.85	8.16	6.02	7.54	0.12	0.54	4.75	6.60	5.49	5.23
4	7.00	8.85	8.15	10.80	8.61	11.30	9.52	13.90	9.73	12.10	8.81	12.50
5	2.02	2.11	6.08	10.10	3.21	2.12*	4.04	3.73	9.21	9.20	9.70	0.00*
6	7.28	9.55	7.21	10.00	6.72	10.00	10.40	14.40	7.84	5.80	8.73	9.09
7	22.80	23.30	22.70	23.20*	22.60*	23.20*	3.10	3.30	22.10*	22.60*	21.90*	22.70*
8	28.60	28.10	11.80	12.20	10.20	11.70	8.44	14.40	8.93	11.90	4.94	7.63
9	5.33	9.61	5.76	7.64	6.00	7.43	7.58	9.48	4.08	7.18	5.01	6.83
10	4.87	0.67	3.57	5.32	5.65	10.50	1.00	6.20	4.32	7.85	5.04	0.90
11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	7.54	10.70	7.61	11.40	7.17	11.30	10.20*	15.80*	10.80	11.40	17.80*	11.30*
14	6.87	10.20	7.29	9.00	8.26	9.91	5.32	12.60	6.88	8.94	8.73	9.19
15	6.25	7.86	5.49	6.48	5.72	7.27	4.55	6.84	5.00	6.69	5.12	5.85
16	12.10	15.40	20.60	8.38	7.27	8.08	2.83	8.91	10.50	5.67	6.96	5.60
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	2.51	2.51	4.24	7.06	4.35	6.08	17.00	19.80	2.05	4.11	4.13	3.86
19	*	*	*	*	*	*	*	*	*	*	*	*
20	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*

TABLE 27 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	80.70	104.00	81.50	101.00	86.00	101.00	75.60	112.00	78.80	106.00	87.20	114.00
2	69.60	85.30	69.30	88.00	71.90	87.20	73.90	89.30	79.40	89.30	72.80	88.30
3	64.20	122.00	73.50	91.80	61.20	41.10	53.10	62.30	59.50	69.40	51.30	75.10
4	77.80	95.30	77.70	101.00	79.10	97.80	75.40	96.80	73.70	96.70	80.10	99.00
5	55.50	88.80	52.30	81.80	77.50	85.90	74.20	71.20	53.30	69.10	60.40	102.00
6	82.90	84.50	74.40	89.40	74.40	96.90	74.90	110.00	76.70	103.00	61.50	101.00
7	57.00	64.30	47.90	58.00	46.00	65.90	31.40*	59.40	53.70	64.70	48.80	58.50
8	73.70	88.60	89.90	115.00	90.50	98.80	71.90	90.70	72.40	107.00	47.00	110.00
9	68.10	99.80	78.10	107.00	79.00	104.00	84.10	109.00	80.20	97.70	75.40	110.00
10	79.00	90.40	92.10	96.20	64.30	73.30	78.60	75.80	75.90	79.50	71.50	72.90
11	278.00*	353.00*	254.00*	286.00*	278.00*	322.00*	239.00*	293.00*	284.00*	241.00*	333.00*	258.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	87.30	105.00	85.90	118.00	93.10	96.70	83.30*	143.00*	89.50	96.10	91.40*	137.00*
14	87.90	113.00	84.10	106.00	88.30	108.00	60.30	68.30	79.70	101.00	84.50	105.00
15	65.20	81.90	64.30	81.20	62.00	79.00	61.20	74.60	56.10	74.60	61.20	72.80
16	81.10	105.00	74.00	130.00	80.70	111.00	89.60	124.00	69.80	80.10	103.00	116.00
17	64.00*	59.10*	68.90	104.00	63.00	82.70	83.00	91.00	62.00	82.00	82.00	101.00
18	82.60	191.00*	40.40	113.00	144.00*	134.00	66.20	98.40	88.70	60.80	69.50	82.60
19	*	*	*	*	*	*	*	*	*	*	*	*
20	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*

TABLE 27 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
LAB NUMBER												
1	382.00	548.00	360.00	537.00	410.00	544.00	371.00	405.00	371.00	452.00	381.00	470.00
2	343.00	457.00	351.00	459.00	347.00	463.00	367.00	458.00	371.00	471.00	356.00	429.00
3	296.00	370.00	374.00	362.00	328.00	412.00	177.00	399.00	318.00	434.00	328.00	403.00
4	388.00	471.00	375.00	467.00	396.00	461.00	394.00	498.00	406.00	488.00	396.00	494.00
5	524.00	582.00	255.00	418.00	250.00	278.00	328.00	382.00	305.00	381.00	303.00	468.00
6	225.00	153.00	245.00	162.00*	245.00	147.00	248.00	152.00	245.00	186.00	252.00	186.00*
7	368.00	561.00	327.00	498.00	282.00	375.00	387.00	514.00	350.00	575.00	394.00	494.00
8	319.00	448.00	355.00	413.00	421.00	424.00	352.00	487.00	419.00	638.00	657.00*	517.00
9	460.00	605.00	443.00	600.00	437.00	564.00	486.00	621.00	459.00	580.00	465.00	562.00
10	340.00	320.00	429.00	359.00	328.00	346.00	318.00	346.00	362.00	375.00	319.00	335.00
11	328.00	419.00	289.00	383.00	311.00	403.00	297.00	478.00	309.00	505.00	360.00	508.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	355.00	520.00	483.00	473.00	419.00	535.00	390.00*	516.00*	390.00	622.00	448.00*	614.00*
14	419.00	401.00	397.00	435.00	433.00	419.00	307.00	391.00	399.00	400.00	347.00	458.00
15	336.00	437.00	290.00	339.00	273.00	390.00	262.00	378.00	284.00	389.00	260.00	371.00
16	423.00	509.00	371.00	480.00	414.00	452.00	370.00	379.00	317.00	488.00	381.00	481.00
17	277.00*	314.00*	393.00	452.00	342.00	457.00	405.00	466.00	363.00	424.00	445.00	538.00
18	487.00	556.00	517.00	549.00	880.00*	1480.00*	332.00	623.00	504.00	661.00	243.00	452.00
19	*	*	*	*	*	*	*	*	*	*	*	*
20	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*

TABLE 28. RAW DATA FOR BROMOMETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	6.34	9.95	4.98	10.80	5.70	9.26	7.65	13.20	8.08	5.48	8.57	10.50
2	11.20	13.00	16.20*	17.00	9.94	14.40	11.50	13.20	10.90	12.80	13.20	17.80
3	6.06	5.73	5.26	5.68	1.49	1.94	1.23	2.34	6.34	4.99	0.00*	0.00*
4	3.52	4.71	4.18	5.49	3.53	5.43	4.41	7.18	4.55	4.91	4.82	7.67
5	3.83	4.80	3.39	6.37	4.97	6.01	3.07	4.30	3.71	16.60	8.18	14.20
6	0.00*	20.50*	0.00*	22.30*	23.30*	33.50*	9.30	23.30	16.70*	17.70*	14.80*	16.70*
7	3.99	3.62	5.42	8.50	7.07	11.90	17.40*	20.60*	14.50*	55.30*	57.60*	61.20*
8	0.50*	0.44*	0.35	1.10	2.61	4.09	0.52*	0.60*	0.50	5.04	0.00*	0.00*
9	3.17	4.99	2.42	3.92	0.56	1.82	2.22	3.51	4.25	3.63	3.59	3.92
10	7.30	12.10	9.17	13.30	9.17	10.90	10.20	15.20	2.25	15.40	0.00*	4.90
11	0.92	2.30	2.83	0.00*	2.36	2.04	2.14	1.51	0.00*	2.50	2.97	6.06
12	8.85	9.72	7.43	9.06	5.48	7.73	8.98	12.30	7.23	10.60	9.37	11.20
13	3.78	3.89	3.06	4.50	3.13	4.57	3.22	4.96	1.70*	3.23*	3.40	3.99
14	6.14	6.21	4.74	7.30	5.69	7.64	7.79	7.29	5.97	7.54	6.69	8.58
15	7.21	9.06	6.01	7.12	7.21	8.86	5.98	9.25	6.09	8.56	7.27	10.90
16	4.59	5.37	4.65	6.21	12.60	0.07	4.43	4.35	5.04	4.38	4.43	3.30
17	48.30*	100.00*	11.70*	12.30*	76.00*	91.00*	14.70	16.00	23.00*	66.80*	95.00*	26.00*
18	2.88	3.39	2.30*	2.74*	1.74*	2.21*	1.21*	1.82*	1.57*	3.07*	3.25*	2.72*
19	0.08	10.20	5.37	6.39	16.40	13.20	4.70	3.61	5.91	9.68	2.20	1.67
20	5.06	5.38	6.21	1.84	5.16	2.80	5.66	6.42	3.75	3.53	4.73	4.99

TABLE 28 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	22.80	30.80	22.20	32.60	28.50	38.60	24.90	34.70	22.30	20.10	24.00	22.50
2	28.40	41.20	37.90	68.40	37.00	50.50	49.90	72.00	41.10	52.00	53.30	71.60
3	12.50	102.00	87.40	138.00	53.10	72.90	9.29	8.00	49.70	82.50	2.71	19.10
4	20.70	27.90	28.00	34.40	24.80	37.20	23.90	29.00	21.20	29.70	24.50	32.30
5	23.10	24.80	22.00	26.90	26.10	32.30	22.80	33.10	25.60	26.60	23.20	30.30
6	125.00*	139.00	125.00	146.00	146.00*	146.00*	132.00*	153.00*	125.00*	139.00*	125.00*	180.00*
7	65.70*	92.30	82.50	123.00	83.90*	121.00	108.00*	161.00*	125.00*	245.00*	166.00*	229.00*
8	12.00*	23.60*	11.70	61.40	22.00	29.60	22.40*	18.00*	13.90	51.00	10.10	34.30
9	26.30	30.00	26.00	30.80	24.90	39.80	26.70	27.80	26.80	28.60	22.90	38.00
10	103.00*	124.00	113.00	161.00	97.40*	104.00	97.10*	122.00*	110.00*	135.00*	107.00*	137.00*
11	20.80	11.50	22.80	28.10	18.40	24.90	18.10	34.70	21.80	31.70	28.10	33.70
12	20.10	68.60	50.30	70.00	48.20	62.00	62.80	78.50	49.70	67.00	58.60	78.20
13	27.00	34.60	25.20	31.00	25.70	27.70	26.50	34.40	18.10*	24.50*	27.50	30.50
14	27.30	38.80	27.80	38.10	25.30	33.80	30.20	40.80	29.10	38.90	32.70	38.60
15	39.00	49.70	34.60	41.80	32.90	43.70	33.90	44.80	37.80	50.60	32.50	48.90
16	36.60	28.30	27.40	45.80	29.10	35.20	31.70	35.20	24.50	29.70	22.00	30.50
17	82.70*	110.00*	73.00*	102.00*	23.20	96.70	20.40	23.90	78.70*	112.00*	100.00*	88.90*
18	23.10	26.10	20.00*	27.70*	15.50*	21.60*	14.70*	22.50*	19.70*	26.00*	15.40*	19.20*
19	21.50	26.90	13.90	26.90	15.20	40.60	12.90	29.90	20.10	38.80	21.80	26.40
20	25.50	34.00	37.70	44.80	36.60	52.50	37.70	49.30	30.00	54.20	32.20	39.20

TABLE 28 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00
LAB NUMBER												
1	291.00	427.00	539.00	474.00	244.00	509.00	438.00	492.00	457.00	483.00	453.00	468.00
2	415.00	535.00	513.00	628.00	483.00	738.00	634.00	672.00	515.00	676.00	624.00*	674.00
3	667.00	1200.00*	1130.00	1480.00	643.00	1270.00	1150.00*	1320.00	869.00*	1650.00	908.00*	976.00*
4	295.00	403.00	301.00	405.00	343.00	424.00	336.00	465.00	321.00	412.00	329.00	436.00
5	424.00	656.00	405.00	515.00	474.00	586.00	390.00	459.00	342.00	416.00	349.00	478.00
6	737.00	1684.00*	884.00	1850.00	800.00*	2900.00*	0.00*	2190.00*	800.00*	1980.00*	1100.00*	2060.00*
7	470.00	625.00	655.00	831.00	1050.00	897.00	1100.00*	1320.00*	1300.00*	1370.00*	1750.00*	1960.00*
8	343.00*	450.00*	343.00	394.00	306.00	444.00	353.00*	346.00*	337.00	359.00	363.00	489.00
9	395.00	516.00	439.00	552.00	484.00	619.00	446.00	637.00	466.00	635.00	431.00	433.00
10	425.00	523.00	433.00	556.00	456.00	451.00	415.00	513.00	465.00	513.00	418.00	518.00
11	326.00	553.00	279.00	622.00	379.00	538.00	350.00	540.00	372.00	566.00	329.00	582.00
12	752.00	1070.00*	1100.00	1550.00	1140.00	1120.00	872.00*	1400.00	1264.00*	1527.00	1170.00*	1550.00*
13	388.00	496.00	349.00	523.00	355.00	492.00	257.00	500.00	260.00*	372.00*	374.00	539.00
14	356.00	495.00	339.00	440.00	357.00	502.00	376.00	446.00	369.00	504.00	386.00	525.00
15	421.00	647.00	394.00	685.00	411.00	685.00	392.00	682.00	453.00	706.00	402.00	631.00
16	389.00	431.00	406.00	483.00	333.00	376.00	350.00	387.00	296.00	332.00	299.00	370.00
17	2600.00*	2200.00*	2100.00*	2500.00*	495.00	640.00	560.00	580.00	1900.00*	2400.00*	2900.00*	2400.00*
18	261.00	351.00	271.00*	351.00*	326.00*	419.00*	318.00*	428.00*	321.00*	398.00*	298.00*	400.00*
19	511.00	338.00	348.00	350.00	345.00	433.00	343.00	301.00	471.00	389.00	352.00	487.00
20	459.00	585.00	587.00	751.00	964.00	1410.00	608.00	732.00	623.00	777.00	438.00	611.00

TABLE 29. RAW DATA FOR CHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.44	10.70	5.54	11.70	6.82	10.10	7.47	9.41	6.35	7.88	7.38	7.99
2	5.77	9.45	5.68	8.53	6.22	8.85	3.71	8.79	5.68	8.12	5.96	8.92
3	9.71*	9.53*	9.98*	11.90*	4.88	7.54	3.05	4.87	4.20	4.35	6.14	1.30
4	7.39	10.40	8.39	11.30	9.25	12.90	9.65	14.60	8.09	10.60	11.20	15.40
5	6.34	9.24	6.85	10.50	6.92	10.00	6.88	9.96	7.16	12.80	7.98	12.40
6	0.00*	3.15*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	2.10*	0.00*	0.00*
7	5.99	6.60	6.90	12.80	11.60*	19.70*	15.20*	19.30*	9.33*	20.30*	18.40*	42.40*
8	3.33	5.73	3.73	5.60	2.93	6.40	4.00	2.80	4.00	6.67	7.07	11.90
9	6.70	8.96	4.97	9.00	5.17	6.09	5.48	8.53	6.21	8.37	7.10	7.62
10	11.50	24.00*	9.53	25.00*	14.50	22.20*	22.50	29.30	4.83	20.00*	8.36	30.60*
11	4.41	8.78	4.92	7.72	5.55	7.38	5.40	7.64	3.38	8.09	5.51	8.38
12	5.86	7.19	5.96	8.30	5.61	6.57	6.49	9.50	6.30	9.25	6.36	9.79
13	5.54	7.65	5.00	8.34	4.08	8.31	4.55	8.67	2.53*	6.43*	4.08	7.75
14	9.45	10.30	8.11	12.00	8.29	12.50	9.25	12.40	8.45	11.30	9.15	11.50
15	7.34	10.80	6.69	9.28	7.03	11.30	6.69	10.60	6.45	10.10	6.95	12.20
16	7.66*	15.30*	13.20*	16.90*	6.32	14.70	12.20*	18.40*	12.20	10.00	7.19	11.50
17	45.30*	69.00*	11.30*	14.80*	64.00*	59.00*	24.60	27.10	17.50*	65.00*	12.80	23.00*
18	4.77	7.27	4.43*	6.30*	3.81	5.14	2.25*	3.57*	3.94	6.75	4.64	5.71
19	4.46	9.50	7.05	6.23	16.60	14.70	5.26*	3.66*	5.71	3.25	2.63*	0.12*
20	6.48	8.80	7.50	10.80	9.89	11.20	7.36	9.66	8.12	7.31	8.76	8.59

TABLE 29 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	37.20	47.80	44.80	44.80	35.10	57.30	32.20	48.30	30.70	38.20	27.90	41.50
2	31.50	44.60	32.60	43.70	37.20	44.50	38.70	48.10	29.70	34.70	36.00	43.70
3	64.10*	119.00*	90.20*	135.00*	56.30	93.30	21.00	20.00	49.90	77.20	11.50	21.90
4	32.10	45.80	42.20	52.50	42.80	56.60	35.80	45.20	33.60	47.80	36.90	50.70
5	31.50	42.60	34.30	44.00	37.00	48.00	39.30	51.60	37.00	42.40	42.20	43.70
6	25.30*	0.00*	33.60*	25.30*	25.30*	42.10*	25.00*	25.60*	8.40*	16.90*	25.30*	0.00*
7	93.20*	113.00*	104.00*	154.00*	73.70*	86.90*	78.20*	109.00*	87.70*	147.00*	116.00*	150.00*
8	24.40	26.30	23.70	42.10	25.20	35.70	26.00	35.20	21.70	32.50	37.90	51.10
9	31.50	40.90	31.70	42.90	31.00	47.60	32.00	39.50	32.00	40.60	32.20	44.60
10	68.40*	93.50*	90.90*	72.80	85.80*	103.00	66.50*	90.50*	74.50	96.30	70.30	90.50
11	34.50	45.80	31.60	46.20	33.40	40.60	32.60	45.00	33.40	48.20	35.80	45.80
12	15.60	55.90	44.00	57.40	30.90	41.80	41.60	53.70	33.20	48.70	39.40	52.80
13	39.50	53.30	36.60	48.30	36.90	44.60	37.30	54.80	25.80*	32.90*	36.80	40.50
14	38.30	54.10	38.40	52.60	40.30	50.30	45.30	60.30	42.40	60.40	43.20	56.00
15	48.20	58.60	49.10	54.40	47.50	57.20	47.40	56.30	48.50	60.90	45.90	60.40
16	81.60*	61.50*	65.20*	101.00*	58.70	66.30	77.80*	98.00*	63.50	85.60	60.80	80.50
17	43.00*	67.00*	56.00*	65.00*	18.60	106.00	30.70	38.30	56.50*	75.00*	18.50	10.50
18	33.60	39.40	26.70*	38.80*	26.60	41.50	25.30*	35.00*	29.30	38.10	27.80	32.20
19	26.60	33.10	18.70	33.10	24.10	43.10	15.20*	33.70*	25.70	40.70	25.70*	28.70*
20	37.70	46.70	49.90	63.90	55.40	47.20	44.50	57.90	38.00	60.50	40.30	53.40

TABLE 29 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00
LAB NUMBER												
1	391.00	480.00	537.00	579.00	380.00	555.00	446.00	510.00	474.00	533.00	452.00	513.00
2	386.00	521.00	377.00	487.00	405.00	532.00	453.00	531.00	407.00	511.00	400.00	464.00
3	666.00*	1100.00*	1060.00*	1270.00*	623.00	1000.00*	930.00*	1010.00*	793.00*	1130.00*	741.00	753.00
4	372.00	456.00	370.00	491.00	418.00	491.00	422.00	540.00	408.00	489.00	411.00	518.00
5	523.00	665.00	435.00	504.00	491.00	575.00	491.00	516.00	402.00	492.00	414.00	499.00
6	75.00*	248.00*	0.00*	500.00*	250.00*	300.00*	0.00*	400.00*	175.00*	400.00*	175.00*	400.00*
7	498.00	508.00	595.00	551.00	872.00*	709.00*	919.00*	1110.00*	1110.00*	1160.00*	1340.00*	1400.00*
8	426.00	574.00	490.00	536.00	485.00	623.00	487.00	457.00	481.00	457.00	553.00	663.00
9	381.00	450.00	401.00	447.00	433.00	513.00	422.00	562.00	429.00	523.00	352.00	457.00
10	514.00	544.00	542.00	550.00	287.00	565.00	504.00	522.00	520.00	534.00	506.00	510.00
11	386.00	484.00	386.00	522.00	382.00	485.00	409.00	450.00	424.00	472.00	387.00	499.00
12	342.00	421.00	460.00	587.00	477.00	485.00	369.00	530.00	525.00	559.00	480.00	572.00
13	466.00	512.00	441.00	518.00	455.00	501.00	379.00	531.00	273.00*	445.00*	396.00	515.00
14	497.00	678.00	507.00	604.00	486.00	644.00	493.00	547.00	513.00	640.00	512.00	657.00
15	535.00	591.00	522.00	624.00	562.00	641.00	532.00	658.00	571.00	649.00	563.00	649.00
16	551.00*	674.00*	562.00*	632.00*	614.00	661.00	556.00*	596.00*	487.00	527.00	262.00	546.00
17	930.00*	830.00*	850.00*	950.00*	360.00	490.00	450.00	420.00	980.00*	1000.00*	840.00	740.00
18	334.00	443.00	321.00*	420.00*	461.00	552.00	394.00*	446.00*	389.00	427.00	405.00	510.00
19	489.00	337.00	337.00	386.00	346.00	440.00	342.00*	287.00*	430.00	414.00	357.00*	465.00*
20	435.00	516.00	598.00	740.00	539.00	690.00	516.00	576.00	539.00	599.00	436.00	557.00

TABLE 30. RAW DATA FOR 1,1-DICHLOROETHENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.41	10.50	6.93	11.10	6.37	9.60	8.23	10.20	8.23	7.77	6.45	8.49
2	6.93	9.21	6.65	9.12	6.81	8.70	6.89	8.55	6.11	10.00	7.06	10.40
3	9.40	12.20	9.44	12.40	8.51	12.10	7.98	10.60	8.11	10.30	2.54	4.81
4	6.68	9.27	7.63	9.87	9.77	12.70	10.60	15.30	4.70	7.51	8.14	10.80
5	6.89	10.10	7.90	13.00	14.10	15.30	0.00*	0.00*	12.10*	19.20*	22.20*	24.70*
6	5.82	10.20	7.45	9.67	8.18	10.30	7.27	8.85	8.45	11.30	9.81	11.30
7	4.57	8.22	7.46*	11.50*	16.10*	26.70*	17.70*	23.90*	8.28*	13.50*	17.10*	21.50*
8	5.08	8.88	6.47	8.47	5.08	8.93	6.47	7.45	5.70	12.20	10.10	12.50
9	8.38	10.30	6.03	8.79	6.35	9.80	6.24	8.68	6.90	10.50	6.71	7.44
10	2.76	12.10	2.73	10.10	1.91	15.70	3.42	7.29	2.50	13.80	6.92	10.30
11	5.34	9.03	5.37	7.84	6.45	9.16	7.93	11.20	1.29	5.43	6.43	8.11
12	7.90	9.41	8.17	10.20	8.20	8.10	10.40	14.40	9.02	12.90	10.10	13.40
13	5.35	8.60	5.11	9.89	5.16	9.42	5.96	10.50	5.22	11.70	4.11	6.89
14	7.75	9.92	6.76	9.76	8.01	10.50	6.94	9.48	7.02	9.24	7.17	9.43
15	7.92	12.10	7.40	10.50	7.61	11.40	9.62	12.40	6.91	10.70	8.87	11.90
16	8.03	9.04	6.71	9.44	8.84	9.04	6.12	9.31	6.61	7.04	5.80*	6.03*
17	7.60	7.00	4.80	5.90	5.10	7.00	7.00	9.10	7.80	9.60	25.00*	38.50*
18	4.07	6.19	3.74*	8.80*	0.49	0.49*	1.70	2.77	4.70	1.74	0.00*	0.00*
19	4.05	5.37	5.00	6.16	14.10	12.10	5.09	6.72	3.85	1.78	5.24	7.20
20	8.42*	12.40*	6.45	10.60	8.69*	11.60*	30.60*	42.10*	12.30*	17.70*	58.00*	43.00*

TABLE 30 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	36.40	65.60	39.20	73.00	41.40	56.60	48.30	67.30	49.60	65.60	49.70	63.90
2	38.20	47.90	40.50	46.80	37.40	47.30	39.50	48.20	49.30	61.60	47.00	57.60
3	50.50	84.90	67.20	92.80	55.20	64.20	34.20	40.80	51.00	127.00*	31.70	43.60
4	34.30	47.80	44.00	57.00	47.90	63.10	42.10	47.90	36.60	50.80	41.20	54.00
5	33.60	51.40	37.40	49.10	47.50	57.40	146.00*	240.00*	77.80*	123.00*	98.10*	133.00*
6	30.20	26.90	33.70	32.60	34.90	38.30	39.80	28.10	28.50	30.70	44.20	32.20
7	68.80*	84.00	81.60*	117.00*	70.20*	73.70*	79.80*	102.00*	87.40*	93.20*	91.60*	113.00*
8	36.40	40.90	35.40	48.20	37.90	51.60	41.90	49.50	32.50	46.40	54.10	67.70
9	34.20	46.60	36.50	48.80	34.90	43.60	34.90	47.70	37.10	43.30	40.00	28.20
10	80.70*	88.00	76.10	101.00	114.00*	93.80*	84.30*	90.20	79.40	83.00	104.00*	79.80
11	37.30	48.60	34.20	45.40	35.70	43.50	35.10	45.70	34.00	44.60	36.50	47.60
12	39.50	83.10	63.30	77.70	43.70	59.20	63.20	77.70	55.20	68.70	58.20	78.40
13	41.00	58.60	39.70	52.20	42.10	52.30	41.30	55.50	40.20	49.60	40.10	44.60
14	41.00	53.70	39.10	53.20	40.80	49.10	47.70	62.30	42.70	54.20	44.70	59.20
15	41.20	52.70	39.80	48.00	37.40	50.10	41.60	51.80	38.90	51.30	39.50	53.20
16	53.00	44.10	42.00	54.30	39.10	48.00	40.00	45.30	54.40	64.50	33.90*	41.60*
17	29.80	38.30	28.00	31.40	29.40	67.00	37.60	49.20	47.30	62.00	105.00*	106.00*
18	35.10	91.80	32.40*	36.10*	35.70	72.30	11.20	216.00*	76.00	95.90	159.00*	174.00*
19	30.60	36.50	26.20	37.20	32.40	44.00	31.50	38.10	28.40	37.50	33.70	35.30
20	68.10*	90.40*	60.40	80.40	73.10*	204.00*	196.00*	257.00*	88.80*	113.00*	248.00*	304.00*

TABLE 30 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
LAB NUMBER												
1	324.00	456.00	536.00	465.00	511.00	471.00	389.00	392.00	428.00	396.00	358.00	338.00
2	435.00	337.00	447.00	324.00	431.00	297.00	419.00	300.00	482.00	275.00	459.00	299.00
3	128.00	133.00	178.00	141.00	123.00	122.00	150.00	120.00	144.00	141.00	126.00*	974.00*
4	432.00	375.00	456.00	414.00	495.00	408.00	521.00	445.00	474.00	399.00	472.00	421.00
5	566.00	578.00	649.00	485.00	639.00	481.00	1530.00*	1330.00*	737.00*	692.00*	2290.00*	2150.00*
6	229.00	246.00	206.00	286.00	341.00	314.00	63.30	330.00	306.00	286.00	529.00	314.00
7	627.00	509.00	827.00*	821.00*	747.00*	539.00*	713.00*	704.00*	912.00*	812.00*	948.00*	832.00*
8	414.00	348.00	436.00	328.00	447.00	380.00	413.00	291.00	423.00	296.00	464.00	405.00
9	434.00	357.00	503.00	361.00	552.00	466.00	569.00	490.00	511.00	478.00	371.00	328.00
10	370.00	326.00	346.00	438.00	412.00	325.00	367.00	392.00	389.00	411.00	357.00	356.00
11	398.00	333.00	429.00	370.00	404.00	369.00	416.00	316.00	437.00	349.00	397.00	333.00
12	298.00	249.00	386.00	341.00	392.00	357.00	339.00	255.00	408.00	338.00	404.00	329.00
13	466.00	394.00	475.00	397.00	484.00	383.00	463.00	479.00	436.00	478.00	466.00	496.00
14	516.00	500.00	516.00	444.00	544.00	471.00	525.00	413.00	506.00	464.00	561.00	466.00
15	614.00	451.00	575.00	469.00	578.00	473.00	617.00	492.00	597.00	467.00	582.00	444.00
16	248.00	211.00	255.00	240.00	212.00	207.00	194.00	205.00	191.00	180.00	196.00*	193.00*
17	410.00	350.00	460.00	330.00	330.00	320.00	545.00	225.00	570.00	500.00	1200.00*	1100.00*
18	464.00	541.00	209.00*	205.00*	633.00	470.00	2060.00*	1560.00*	767.00	657.00	2680.00*	1320.00*
19	660.00	295.00	475.00	344.00	491.00	365.00	508.00	314.00	499.00	388.00	531.00	559.00
20	845.00*	714.00*	831.00	724.00*	2370.00*	1960.00*	2010.00*	1770.00*	1300.00*	1000.00*	2910.00*	2500.00*

TABLE 31. RAW DATA FOR CHLOROFORM ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.56	9.48	6.80	10.10	6.07	8.52	9.46	10.20	7.13	7.31	2.40*	6.19*
2	8.20	10.20	5.02	8.96	7.62	9.93	10.70	6.61	9.78	9.79	3.83	1.51
3	7.51	8.67	27.80	1.30	6.33	7.98	5.02	5.47	6.69	8.45	0.00*	0.00*
4	7.63	9.33	6.10	8.80	8.39	10.20	9.59	12.70	7.52	9.00	8.20	9.10
5	8.75	10.90	4.45	7.36	7.28	9.25	7.83	10.20	7.34	10.30	7.69	10.00
6	7.19	10.10	18.70	16.30	8.98	10.30	7.64	7.55	9.40	8.97	55.30*	52.70*
7	4.60	6.05	0.00*	0.00*	10.10	14.30	9.38	11.10	7.99	6.60	5.80	17.70
8	4.67	8.76	11.00	16.30	0.00*	19.70	5.56	6.83	4.30	9.48	8.60	15.20
9	8.32	11.20	23.80	37.30*	6.01	10.50	6.65	8.33	7.14	10.40	6.79	8.86
10	4.95	11.80	1.70	13.40	6.07	11.20	4.52	11.80	5.11	10.00	7.10	18.90
11	7.76	11.60	21.80	22.30	9.41	10.80	8.22	10.90	6.47	8.27	10.40	9.40
12	6.86	8.26	50.40*	33.70*	7.14	0.00*	10.10	10.90	7.84	11.10	8.00	4.40
13	4.88	7.03	6.75	5.90	4.88	9.18	0.00*	5.60	3.77	11.50	0.00*	0.00*
14	7.83	8.92	5.90	7.60	7.59	9.41	6.12	8.22	6.87	9.34	6.70	9.00
15	4.64	8.11	5.70	7.30	4.92	20.40	13.50	15.30	4.60	8.90	4.80	6.00
16	7.41	8.77	9.40	12.20	9.70	8.59	6.80	9.04	7.44	8.95	13.20	0.00*
17	7.30	7.00	5.90	7.20	5.50	7.20	4.60	5.90	6.30	6.90	5.30*	58.30*
18	6.65	8.42	0.00*	0.00*	5.03	6.35	0.00*	0.00*	5.82	10.40	0.00*	0.00*
19	7.07	5.62	30.80	18.90	21.50*	12.40	0.00*	4.91	6.32	2.62*	0.00*	1.10
20	6.85	9.12	3.30	13.40	6.78	8.94	8.10	9.00	6.66	8.62	25.20*	21.60

TABLE 31 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	37.20	51.00	39.40	57.20	37.40	48.80	45.40	33.50	41.40	34.70	16.90*	20.40*
2	42.80	52.80	43.40	50.00	42.50	49.10	49.30	53.00	47.30	56.10	51.00	60.90
3	36.60	54.70	58.20	78.20*	35.60	42.60	19.90	54.70	36.90	100.00*	0.00*	10.30*
4	35.20	45.50	39.90	53.00	44.60	56.10	36.80	42.30	37.50	48.90	41.10	47.80
5	38.10	45.30	37.30	47.10	37.90	47.10	38.40	47.80	38.50	48.70	32.60	36.50
6	37.60	29.10	67.10	50.80	36.60	37.00	39.10	25.40	30.60	34.20	33.80	17.90
7	44.70	58.80	0.00*	12.90*	35.20	40.00	41.30	49.90	46.50	54.60	65.40	64.90
8	34.30	33.20	34.50	50.80	39.60	77.60	35.00	39.40	25.40	37.50	54.90	48.60
9	38.30	49.10	36.20	40.30	40.40	50.40	34.90	44.90	43.80	51.00	47.10	44.20
10	46.60	46.80	38.90	44.60	39.70	59.30	49.60	52.10	42.00	46.00	33.50	50.00
11	39.90	50.40	42.10	60.10	38.40	44.00	42.40	46.80	38.80	49.10	40.80	50.00
12	54.80*	68.60	95.70*	97.80*	38.40	42.80	46.00	58.00	55.40	47.70	41.60	54.30
13	40.50	58.50	23.10	43.50	41.50	49.70	34.00	49.70	44.00	52.60	27.20	28.60
14	38.10	47.10	32.20	42.90	34.70	42.40	37.80	46.80	37.20	46.20	39.30	48.10
15	36.40	41.00	39.00	43.70	40.10	43.00	36.50	43.40	32.40	41.40	31.00	41.40
16	47.50	39.40	40.40	49.50	39.30	48.80	44.40	51.90	46.40	54.80	35.20	41.50
17	36.20	46.10	39.70	49.50	32.80	71.00	28.70	32.90	38.00	50.00	58.30*	116.00*
18	38.30	46.00	25.10	103.00*	30.90	43.10	0.00*	28.00	39.10	46.80	23.70	33.40
19	45.30	49.50	49.40	42.30	41.00	53.10	36.80	44.60	43.40	51.00	38.40	37.00
20	39.80	50.70	40.00	45.40	43.00	74.20	40.10	53.00	38.20	47.20	50.80	60.20

TABLE 31 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00
LAB NUMBER												
1	283.00	470.00	321.00	459.00	389.00	473.00	280.00	316.00	288.00	416.00	134.00*	191.00*
2	382.00	459.00	371.00	458.00	384.00	482.00	387.00	494.00	335.00	529.00	417.00	509.00
3	361.00	517.00	545.00*	554.00	341.00	475.00	424.00	480.00	392.00	541.00	324.00*	374.00*
4	391.00	496.00	383.00	492.00	412.00	496.00	418.00	518.00	405.00	493.00	386.00	501.00
5	493.00	632.00	373.00	459.00	352.00	459.00	375.00	486.00	348.00	454.00	355.00	473.00
6	289.00	274.00	367.00	385.00	310.00	345.00	308.00	333.00	298.00	322.00	382.00	347.00
7	271.00	279.00	272.00*	318.00*	289.00	309.00	311.00	314.00	349.00	378.00	333.00	366.00
8	349.00	403.00	373.00	373.00	360.00	618.00	343.00	325.00	348.00	358.00	417.00	446.00
9	337.00	408.00	403.00	408.00	436.00	519.00	415.00	523.00	413.00	537.00	294.00	383.00
10	304.00	338.00	295.00	339.00	227.00	381.00	290.00	352.00	313.00	328.00	292.00	330.00
11	375.00	519.00	371.00	507.00	365.00	475.00	390.00	433.00	411.00	456.00	383.00	470.00
12	327.00	445.00	489.00*	637.00*	476.00	503.00	400.00	483.00	509.00	543.00	441.00	547.00
13	440.00	499.00	425.00	470.00	431.00	462.00	407.00	592.00	392.00	609.00	400.00	612.00
14	347.00	500.00	378.00	436.00	370.00	499.00	342.00	420.00	362.00	474.00	364.00	480.00
15	429.00	521.00	428.00	606.00	414.00	557.00	416.00	590.00	336.00	607.00	419.00	527.00
16	179.00	187.00	168.00*	181.00*	168.00	189.00	175.00*	193.00	191.00	197.00	156.00*	164.00*
17	390.00	460.00	410.00	460.00	280.00	370.00	345.00	305.00	400.00	480.00	530.00*	540.00*
18	341.00	431.00	310.00	389.00	385.00	496.00	363.00	443.00	386.00	498.00	497.00	595.00
19	477.00	301.00	335.00	350.00	329.00	358.00	358.00	318.00	364.00	381.00	353.00	450.00
20	401.00	487.00	420.00	491.00	628.00*	790.00	418.00	511.00	421.00	492.00	388.00	466.00

TABLE 32. RAW DATA FOR CARBON TETRACHLORIDE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	9.34	10.20	8.19	10.60	6.79	9.57	10.40	12.00	8.63	8.95	13.60	14.50
2	8.54	11.00	7.74	9.67	7.92	9.92	4.18	5.42	5.96	6.63	3.63	5.34
3	8.07	9.39	5.73	7.52	7.50	8.97	4.23	4.73	5.91	7.24	5.49	4.40
4	6.91	8.61	7.53	8.86	9.43*	11.20*	10.40	6.45	7.96	9.42	16.00	18.70
5	6.62	10.20	8.00	7.95	7.59	10.40	0.84	6.32	8.34	21.70*	2.46	7.85
6	6.90	9.28	8.40	10.00	8.47	10.00	9.34	8.40	9.47	8.43	9.47	8.66
7	3.94	5.76	4.78	7.77	14.40*	19.40*	12.10*	12.70*	9.53*	12.40*	15.00*	18.80*
8	5.43	8.66	5.95	6.86	5.56	9.19	6.72	8.27	8.66	12.70	7.91	11.90
9	9.42	10.30	1.14	9.05	6.28	8.33	5.32	7.55	7.56	9.83	6.30	7.66
10	3.00	12.40	0.00*	4.20	2.98*	17.20*	5.25	15.60*	4.10	13.20	0.00*	21.00
11	5.18	10.10	5.18	5.71	7.44	9.70	6.75	9.37	7.83	7.81	6.63	8.01
12	0.64*	0.88*	9.40	1.42	0.00*	7.72	3.06	4.47	0.00*	3.70	0.00*	0.00*
13	6.50	7.81	6.41	9.54	5.52	8.35	4.60	6.25	5.60	11.80	4.83	9.37
14	6.48	7.41	5.27	7.38	6.72	7.91	4.78	5.56	6.42	8.31	5.20	5.55
15	7.96	10.70	8.00	9.68	9.00	11.10	5.07	6.67	5.25	7.70	3.51	5.41
16	6.31	5.91	3.07	0.69	8.38	7.25	5.87	4.04	8.30	9.60	7.50	0.00*
17	7.60	7.40	6.00	7.80	5.80	7.60	0.00*	1.60	5.00	5.50	2.60	7.60
18	6.72	8.97	4.84	2.95	0.12*	6.18	24.50*	0.00*	1.28*	25.10*	5.90	1.70
19	2.92	6.50	5.88	6.20	17.20*	11.80	4.77	7.31	6.55	3.37	3.38	5.51
20	7.89	10.20	13.60*	16.30*	7.77	10.70	13.40*	16.00*	7.01	9.60	23.40*	4.07

TABLE 32 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	34.20	56.60	35.40	61.80	39.40	51.90	43.10	46.40	41.30	49.10	52.40	54.90
2	39.70	53.10	39.50	49.70	40.80	47.70	20.80	25.10	27.50	37.90	28.70	37.40
3	38.70	63.40	53.80	74.10	40.70	48.80	26.90	28.10	41.00	51.60	25.70	38.10
4	36.50	49.50	40.90	54.80	46.70*	62.40*	42.00	46.20	38.00	52.50	51.50	62.30
5	34.30	41.80	49.70	64.10	34.20	50.70	48.20	54.20	31.50	22.50	42.30	44.00
6	37.70	31.10	38.10	33.30	36.90	38.30	39.30	33.80	30.30	35.60	36.50	44.90
7	42.40	55.90	46.60	81.40	60.40*	102.00*	61.10*	106.00*	54.20*	64.10*	48.90*	87.80*
8	34.50	39.90	34.00	45.90	34.70	50.40	42.20	48.30	32.70	46.60	57.10	70.50
9	37.80	50.30	40.90	53.00	40.50	52.20	53.80	61.10	42.30	49.50	86.10	70.40
10	59.10	67.10	75.90*	54.80	70.40*	69.70	72.30*	70.30	59.90	71.50	66.80	47.20
11	35.00	41.30	35.70	47.00	36.70	43.40	36.70	47.80	36.80	49.30	38.80	47.00
12	8.60*	20.50*	14.10	18.70	11.60*	14.60	18.40	26.30	15.70	13.70	7.45	12.30
13	42.60	68.90	41.30	60.70	41.50	59.80	41.10	57.00	39.80	58.20	43.30	53.60
14	32.90	39.20	28.40	38.50	27.80	36.40	32.40	43.70	34.00	38.20	25.40	36.10
15	36.40	46.20	37.00	44.70	36.70	47.80	33.00	42.20	34.30	44.10	26.10	39.40
16	56.70	38.70	36.80	50.40	42.30	51.30	31.90	51.50	42.00	50.00	33.10	41.40
17	35.80	47.00	38.70	51.50	33.00	82.00	32.90	38.90	36.20	51.60	52.60	52.40
18	39.70	36.80	36.90	45.70	35.40	40.50	20.90	224.00*	31.90	35.50	23.70	29.70
19	29.40	38.20	25.80	38.20	31.10	43.50	27.80	35.80	30.70	41.40	28.60	31.90
20	44.60	55.10	50.80*	60.90*	46.10	55.90	53.20*	74.40*	45.20	58.30	50.20	65.00

TABLE 32 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
LAB NUMBER												
1	442.00	604.00	452.00	546.00	428.00	619.00	233.00	386.00	357.00	529.00	386.00	514.00
2	405.00	499.00	388.00	511.00	406.00	456.00	361.00	457.00	408.00	475.00	396.00	469.00
3	388.00	568.00	518.00	586.00	369.00	520.00	412.00	475.00	423.00	588.00	390.00	437.00
4	405.00	502.00	419.00	553.00	444.00*	541.00*	441.00	536.00	428.00	527.00	418.00	535.00
5	459.00	721.00	423.00	565.00	393.00	508.00	362.00	469.00	356.00	418.00	365.00	468.00
6	309.00	340.00	327.00	412.00	327.00	406.00	327.00	404.00	309.00	387.00	409.00	413.00
7	434.00	473.00	518.00	605.00	468.00*	516.00*	503.00*	561.00*	481.00*	522.00*	543.00*	560.00*
8	325.00	381.00	335.00	360.00	343.00	425.00	328.00	328.00	343.00	340.00	403.00	440.00
9	329.00	407.00	421.00	447.00	420.00	503.00	429.00	541.00	359.00	453.00	339.00	432.00
10	415.00	445.00	367.00	562.00	376.00	339.00	417.00	432.00	427.00	441.00	415.00	430.00
11	349.00	425.00	337.00	481.00	351.00	469.00	357.00	424.00	385.00	454.00	322.00	460.00
12	217.00*	328.00*	348.00	555.00	396.00	441.00	395.00	478.00	550.00	475.00	482.00	637.00
13	428.00	484.00	447.00	474.00	411.00	454.00	383.00	583.00	444.00	587.00	412.00	606.00
14	312.00	474.00	313.00	398.00	330.00	478.00	317.00	407.00	328.00	446.00	356.00	466.00
15	488.00	543.00	470.00	573.00	463.00	567.00	426.00	580.00	473.00	563.00	448.00	538.00
16	256.00	247.00	272.00	288.00	216.00	240.00	187.00	212.00	209.00	216.00*	191.00*	205.00*
17	400.00	460.00	420.00	450.00	270.00	400.00	385.00	345.00	430.00	520.00	455.00	595.00
18	335.00	441.00	328.00	424.00	402.00	533.00	558.00	576.00	334.00	399.00	516.00	642.00
19	516.00	355.00	386.00	383.00	394.00	430.00	444.00	386.00	400.00	446.00	441.00	581.00
20	464.00	579.00	502.00*	578.00*	480.00	594.00	494.00*	628.00*	492.00	568.00	463.00	578.00

TABLE 33. RAW DATA FOR *TRANS*-1,3-DICHLOROPROPENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	6.41	7.38	5.98	7.36	4.99	6.54	0.54	0.00*	10.40	10.80	0.69	2.35
2	5.32	7.94	12.70	16.50	6.73	8.23	0.00*	0.00*	2.77	4.23	2.02	1.48
3	10.40	11.60	10.60*	12.10*	8.79	10.70	10.00	0.00*	8.04	10.30	0.00*	0.00*
4	3.37*	3.88*	4.15	4.87	3.35	4.84	0.00*	0.00*	2.30*	3.02*	0.00*	0.00*
5	6.65	8.58	8.20	10.20	7.29	9.44	0.00*	0.00*	7.78	9.89	5.04	8.33
6	5.61	9.02	6.10	9.27	6.83	9.02	0.00*	0.00*	7.68	7.56	0.00*	10.40
7	2.20	3.24	8.27	4.36	11.50	15.00	0.80	0.00*	2.53	11.30	7.10	9.60
8	8.05	12.00	4.83	6.71	8.98	10.30	0.00*	0.00*	15.60	21.20*	13.30	14.80
9	10.40	7.33	7.04	8.25	7.64	9.53	3.88	0.00*	7.57	6.88	7.99	11.30
10	1.26	2.62	1.49	2.74	1.83	3.17	0.76	4.98	1.19	5.60	4.10	8.30
11	9.36	17.90	7.42	11.50	11.80	16.90	0.00*	0.00*	10.70	12.30	12.50	12.00
12	4.57	5.39	4.81	1.59	13.80	3.96	0.00*	0.00*	3.40	7.92	22.00	22.40
13	11.00*	13.90*	11.90*	18.50*	10.70*	17.40*	13.10*	15.90*	9.34*	18.70*	0.00*	0.00*
14	3.76	8.41	3.86	5.02	7.28	4.90	16.50	12.10	3.65	4.43	5.60	8.00
15	4.38	5.80	3.28	3.41	4.72	5.78	242.00*	242.00*	4.41	5.83	3.60	5.10
16	4.85	5.85	6.50	8.48	6.02	7.57	5.00	4.00	4.94	5.54	10.40	0.00*
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	2.75	3.62	1.80	2.10	1.27	5.98	0.00*	0.00*	3.00	9.45	1.30	0.00*
19	7.63	5.90	7.57	9.81	20.00*	15.00	0.00*	12.30	6.30	3.52	0.00*	0.00*
20	10.20*	13.30*	10.80*	13.80*	10.80*	13.40*	12.00*	90.00*	10.20*	12.70*	22.50*	16.00*

TABLE 33 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	52.00	69.80	54.00	73.20	60.00	77.60	0.06	0.06	52.60	55.60	5.80	5.42
2	42.60	56.50	46.50	60.00	48.50	56.70	41.10	50.60	40.00	56.40	47.70	60.20
3	85.20	126.00	105.00*	144.00*	85.20	107.00	64.00	0.00*	87.90	108.00	55.20	85.20
4	28.70*	36.10*	33.40	44.90	36.30	48.50	34.10	38.40	29.00*	35.10*	35.90	42.10
5	66.40	85.50	71.90	90.10	76.00	95.60	49.80	129.00	79.50	104.00	73.30	85.60
6	59.40	48.00	59.40	52.90	57.90	59.80	0.00*	0.00*	46.40	49.20	46.80	75.70
7	42.40	31.90	26.30	40.40	93.20	152.00	318.00*	306.00	108.00	131.00	92.30	145.00
8	77.20	89.80	73.80	95.50	76.60	105.00	0.00*	0.00*	85.00	97.10	108.00	126.00
9	163.00*	217.00*	197.00*	244.00*	177.00*	229.00*	229.00*	260.00	181.00	215.00	229.00*	188.00
10	102.00	110.00	90.20	127.00	88.70	121.00	109.00	125.00	137.00	127.00	136.00	88.30
11	79.80	109.00	80.40	104.00	77.90	98.10	91.70	123.00	84.80	109.00	135.00	164.00
12	37.80	54.30	60.80	41.40	44.40	21.40	13.90	11.90	51.80	25.80	61.80	68.90
13	103.00*	178.00*	97.60*	160.00*	99.60*	163.00*	245.00*	148.00*	104.00*	129.00*	24.70	48.00
14	40.40	50.90	37.40	49.10	35.20	31.60	53.70	69.00	67.30	85.90	40.60	55.30
15	35.80	44.30	34.00	41.80	35.50	45.00	37.10	44.50	35.10	43.70	8.70	18.60
16	29.70	24.00	24.80	25.80	26.60	29.50	22.00	21.00	23.70	26.60	52.70	11.20
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	35.00	42.00	33.90	43.50	57.10	70.60	0.00*	0.00*	69.00	81.10	66.70	67.10
19	90.20	104.00	72.40	104.00	83.40	112.00	29.40	108.00	92.50	116.00	82.60	80.60
20	114.00*	149.00*	118.00*	145.00*	114.00*	201.00*	209.00*	314.00*	123.00*	146.00*	129.00*	166.00*

TABLE 33 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
LAB NUMBER												
1	263.00	318.00	296.00	311.00	266.00	339.00	20.40	45.20	310.00	342.00	35.90	94.70
2	187.00	238.00	173.00	296.00	209.00	224.00	181.00	258.00	288.00	257.00	235.00	243.00
3	420.00	578.00	526.00*	613.00*	359.00	541.00	431.00	418.00	472.00	594.00	406.00	445.00
4	110.00*	131.00*	108.00	136.00	119.00	132.00	108.00	126.00	103.00*	124.00*	110.00	132.00
5	499.00	622.00	383.00	440.00	399.00	479.00	78.10	245.00	353.00	453.00	370.00	452.00
6	250.00	280.00	283.00	376.00	283.00	392.00	73.00	91.00	267.00	320.00	354.00	347.00
7	224.00	540.00	210.00	359.00	405.00	170.00	589.00	269.00	232.00	302.00	230.00	65.30
8	455.00	528.00	471.00	492.00	459.00	567.00	326.00	279.00	456.00	438.00	460.00	565.00
9	351.00	415.00	422.00	435.00	459.00	536.00	287.00	444.00	461.00	525.00	284.00	353.00
10	409.00	424.00	460.00	403.00	254.00	313.00	422.00	419.00	378.00	411.00	405.00	421.00
11	384.00	483.00	373.00	508.00	369.00	460.00	443.00	494.00	414.00	464.00	410.00	453.00
12	84.30	153.00	294.00	394.00	190.00	280.00	233.00	269.00	361.00	234.00	281.00	315.00
13	538.00*	621.00*	573.00*	639.00*	545.00*	576.00*	460.00*	670.00*	510.00*	664.00*	436.00	594.00
14	198.00	259.00	219.00	248.00	213.00	270.00	449.00	261.00	198.00	254.00	377.00	266.00
15	170.00	199.00	162.00	194.00	163.00	201.00	164.00	205.00	166.00	205.00	137.00	166.00
16	255.00	272.00	261.00	278.00	271.00	303.00	176.00	214.00	271.00	280.00	432.00	464.00
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	297.00	373.00	132.00	165.00	305.00	384.00	1020.00*	544.00	321.00	385.00	492.00	583.00
19	396.00	376.00	424.00	428.00	423.00	446.00	472.00	435.00	480.00	469.00	472.00	556.00
20	560.00*	685.00*	586.00*	690.00*	787.00*	930.00*	710.00*	911.00*	643.00*	743.00*	607.00*	736.00*

TABLE 34. RAW DATA FOR 1,1,2-TRICHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.07	9.20	6.63	8.95	6.21	8.43	2.99	3.99	6.38	7.12	8.60	12.10
2	6.48	8.84	7.58	10.20	6.03	8.07	7.73	8.14	6.90	7.57	6.78	7.27
3	10.10	11.40	9.71	11.30	7.56	10.00	0.51	2.92	8.23	12.20	2.97	7.35
4	9.07	10.80	10.60	12.50	9.09	11.20	11.20	15.40	5.58	8.33	10.50	14.30
5	7.10	7.86	8.98	12.80	6.73	8.63	8.07	10.00	7.57	10.40	9.43	10.90
6	8.03	8.91	10.20	10.20	9.17	8.69	10.30	10.50	9.62	6.52	1.59	8.91
7	3.78*	4.89*	8.30	10.20	10.90	13.50	6.39	8.79	7.86	10.80	8.75	13.80
8	5.60	8.88	7.89	10.30	5.23	8.66	8.79	10.00	6.75	8.78	11.30	13.20
9	11.70	14.20	12.40*	14.20*	8.36	10.40	23.20*	24.20*	9.92	12.40	5.90	8.44
10	0.93*	1.60*	1.19*	1.25*	0.82*	1.23*	1.67	1.10	3.16*	4.78*	1.05	3.25
11	7.45	11.80	13.50*	17.50*	9.49	10.90	6.08	13.80	10.30	15.00	12.00	14.80
12	36.00*	43.70*	9.54	4.02	4.50	2.43	29.20*	53.60*	11.80*	52.80*	32.80*	30.70*
13	4.91	5.86	5.34	7.49	4.53	7.66	3.07	4.96	4.33	7.35	0.00*	5.94
14	6.90	8.66	6.71	8.22	7.22	8.29	7.55	10.40	6.04	7.83	6.04	8.08
15	7.69	10.20	7.57	8.72	7.54	10.10	6.95	8.97	7.24	10.10	7.01	8.61
16	6.93	6.82	7.75	7.42	9.15	8.44	5.64	7.28	6.20*	6.33*	12.80	4.68
17	5.30	4.80	4.00*	5.00*	3.70	4.80	5.20	6.50	4.70	5.50	5.20	9.50
18	5.89	7.69	4.02	4.78	3.52	6.39	6.38	9.39	4.40	9.97	4.22	5.22
19	0.19	4.19	4.99	5.87	13.80	9.69	4.03	7.04	4.74	2.60	4.23	7.82
20	8.51*	10.40*	9.90*	12.90*	8.44*	11.40*	18.30*	15.20*	7.90	9.89	10.00	11.80

TABLE 34 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	74.20	83.00	71.40	87.00	58.80	81.00	69.20	58.70	77.20	80.70	81.10	80.20
2	66.40	82.30	76.70	91.80	68.70	80.50	77.70	90.30	75.10	99.60	75.40	106.00
3	81.50	120.00	94.10	126.00	71.30	99.40	76.80	59.10	84.00	98.00	60.70	88.80
4	74.60	98.90	85.40	112.00	89.60	116.00	75.80	85.80	75.40	99.50	82.60	106.00
5	62.20	87.70	65.10	85.00	69.10	82.30	64.70	90.50	79.50	104.00	74.90	91.10
6	62.90	51.40	63.60	55.60	64.40	63.30	63.00	40.40	53.10	49.70	65.10	49.40
7	38.20*	50.80*	52.80	60.40	69.20	101.00	61.50	71.00	67.50	83.50	57.70	93.60
8	72.60	79.70	70.90	94.30	75.30	104.00	86.90	93.10	65.50	92.10	122.00	123.00
9	74.50	99.90	83.90*	106.00*	80.60	104.00	88.30*	112.00*	83.60	97.30	89.50	117.00
10	49.70*	50.40*	51.80*	60.90*	44.00*	54.40*	150.00*	52.80	52.00*	56.40*	159.00*	152.00
11	82.60	110.00	85.40*	118.00*	77.50	93.10	78.80	95.70	86.00	109.00	84.40	102.00
12	136.00*	208.00*	164.00*	97.10	211.00*	73.40	327.00*	348.00*	180.00*	99.80*	186.00*	261.00*
13	64.10	101.00	60.80	88.20	63.10	91.40	29.90	88.30	63.80	80.70	74.60	80.40
14	69.40	87.90	58.70	80.70	59.40	81.00	74.60	92.90	67.50	82.90	68.00	91.00
15	72.00	88.80	71.00	86.10	67.90	85.00	65.60	80.10	66.30	82.70	61.90	79.60
16	67.50	57.20	58.30	67.90	60.00	71.00	51.80	65.40	56.90*	61.00*	50.50	65.80
17	49.30	62.60	50.00*	64.00*	50.00	130.00	63.50	75.10	68.00	85.00	70.70	73.80
18	79.70	90.00	69.70	85.60	67.00	81.70	57.60	55.80	69.20	89.10	69.90	79.60
19	54.60	62.50	45.50	63.10	54.90	69.90	47.00	61.50	58.10	68.90	55.70	57.70
20	107.00*	121.00*	123.00*	147.00*	107.00*	150.00*	110.00*	152.00*	101.00	132.00	112.00	136.00

TABLE 34 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00
LAB NUMBER												
1	314.00	376.00	323.00	378.00	299.00	405.00	239.00	344.00	350.00	456.00	402.00	457.00
2	324.00	396.00	352.00	394.00	324.00	451.00	344.00	412.00	329.00	582.00	372.00	521.00
3	407.00	543.00	496.00*	621.00	274.00	491.00	409.00	435.00	420.00	540.00	392.00	423.00
4	412.00	517.00	405.00	514.00	431.00	507.00	424.00	508.00	402.00	472.00	399.00	507.00
5	399.00	468.00	338.00	386.00	302.00	355.00	303.00	430.00	282.00	401.00	332.00	452.00
6	277.00	312.00	300.00	383.00	300.00	396.00	165.00	355.00	295.00	338.00	345.00	354.00
7	260.00*	301.00*	298.00	334.00	205.00	224.00	241.00	261.00	292.00	307.00	298.00	303.00
8	380.00	461.00	386.00	424.00	409.00	492.00	391.00	328.00	394.00	378.00	428.00	473.00
9	418.00	514.00	500.00*	524.00*	552.00	638.00	525.00*	645.00*	547.00	659.00	397.00	484.00
10	245.00*	260.00*	284.00*	266.00*	261.00*	185.00*	240.00	252.00	279.00*	268.00*	216.00	289.00
11	407.00	473.00	397.00*	456.00*	384.00	441.00	413.00	404.00	435.00	423.00	406.00	422.00
12	354.00*	617.00*	833.00*	1360.00*	820.00*	670.00	1630.00*	1510.00*	2490.00*	1290.00*	1420.00*	1720.00*
13	376.00	434.00	384.00	447.00	393.00	417.00	322.00	497.00	367.00	500.00	378.00	505.00
14	372.00	520.00	391.00	451.00	396.00	518.00	367.00	436.00	370.00	492.00	388.00	476.00
15	371.00	446.00	350.00	432.00	344.00	427.00	331.00	431.00	342.00	429.00	331.00	403.00
16	150.00*	157.00	149.00*	156.00	147.00	166.00	134.00	146.00	138.00*	144.00*	134.00	145.00*
17	260.00	320.00	260.00*	290.00*	270.00	350.00	345.00	305.00	360.00	430.00	370.00	490.00
18	347.00	430.00	308.00	392.00	338.00	422.00	460.00	514.00	366.00	433.00	407.00	503.00
19	451.00	296.00	332.00	340.00	329.00	359.00	351.00	325.00	377.00	371.00	378.00	438.00
20	520.00*	626.00*	562.00*	687.00*	616.00*	722.00*	557.00*	692.00*	554.00	647.00	563.00	655.00

TABLE 35. RAW DATA FOR BROMOFORM ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.10	11.70	7.43	11.60	6.92	9.27	10.40	10.70	8.11	9.33	5.22	7.46
2	7.17	9.00	8.22	10.30	7.70	9.70	4.88	11.20	6.28	7.91	6.96	6.35
3	12.10*	13.80*	11.10*	13.20*	8.06	10.80	6.12	11.40	12.50	3.40	4.32	8.59
4	6.24	7.51	7.97	9.89	7.34	9.07	10.70	14.00	2.55	5.05	7.87	10.50
5	6.47	7.71	1.78	1.51	7.19	9.50	10.80	0.00*	6.92	11.60	6.24	8.11
6	13.80	18.90	15.60*	20.00	16.30*	20.00*	29.40*	7.30	16.88	6.32	2.50	21.10
7	1.51	1.60	0.00*	0.00*	10.50	12.60	7.51	10.50	2.91	1.83	4.44	6.59
8	0.81	7.08	8.94	13.20	6.23	13.30	9.42	12.10	9.76	13.20	15.30	15.30
9	6.89	9.96	5.47	9.24	6.89	8.35	7.77	7.28	5.86	5.68	8.33	11.00
10	0.99	2.51	1.31*	2.41*	0.38	2.63	0.00*	1.69	0.00*	3.92	0.00*	4.61
11	0.00*	6.84	0.00*	12.00	6.03	8.98	9.10	13.20	9.59	18.00	15.00	19.40
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	5.69	7.17	6.96	9.06	5.27	8.48	0.00*	2.91	6.96	11.70	10.10	8.86
14	5.19	6.61	4.37	6.71	4.99	6.17	4.25	6.50	3.96	5.58	4.03	5.21
15	8.26	11.30	8.40	10.10	8.64	11.90	9.04	11.00	12.00	13.60	8.57	10.40
16	0.52	0.09	2.25	5.22	1.59	3.24	3.31	0.00*	0.80	0.00*	6.84	0.00*
17	6.10	5.00	6.00	7.50	4.00	4.70	3.50	1.50	3.20	3.50	7.60	8.60
18	6.49	9.20	4.49	5.62	4.20	12.80	10.90*	18.20*	3.86	10.50	1.02	2.47
19	0.00*	3.07	3.29	3.91	10.90	7.73	2.49	6.81	2.49	1.05	0.00*	4.80
20	6.08	10.40	6.77	10.40	5.79	9.63	8.20*	12.80*	4.35	6.22	5.70	6.80

TABLE 35 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00
LAB NUMBER												
1	76.80	113.00	79.20	118.00	78.00	106.00	89.60	102.00	65.60	93.90	84.60	97.10
2	75.40	95.40	77.80	105.00	78.40	104.00	69.10	88.80	87.30	116.00	82.10	152.00
3	86.50*	134.00*	114.00*	155.00*	74.10	116.00	89.40	83.60	91.90	119.00	87.10	87.50
4	69.20	94.60	80.70	114.00	85.20	117.00	68.10	87.00	69.20	97.90	64.80	116.00
5	62.50	97.30	65.10	82.70	78.20	89.90	69.50	62.60	89.90	113.00	92.30	120.00
6	50.00	35.70	50.00	40.50	43.80	47.60	34.40	28.60	37.50	40.50	40.60	38.10
7	61.80	103.00	108.00	134.00	69.30	75.20	64.20	83.20	44.80	58.50	34.90	104.00
8	77.20	89.40	78.90	112.00	91.10	133.00	94.20	119.00	75.60	112.00	136.00	173.00
9	89.30	128.00	109.00	141.00	99.50	130.00	98.20	123.00	103.00	122.00	79.50	128.00
10	46.20	56.20	53.90*	65.90*	54.40	91.10	43.50	56.70	40.00	59.30	50.20	58.30
11	75.00	109.00	71.50	129.00	72.30	89.10	73.40	85.30	84.30	109.00	86.30	100.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	72.70	127.00	74.60	110.00	82.40	110.00	38.40	117.00	88.30	112.00	93.50	106.00
14	58.80	76.00	48.10	64.70	45.20	72.20	61.30	82.30	53.50	70.90	52.70	74.80
15	74.40	93.10	77.50	96.80	73.40	92.10	72.70	91.70	75.90	97.40	70.50	92.20
16	146.00*	96.20	115.00	187.00	120.00	182.00	75.20	117.00	79.70	113.00	40.00	80.10
17	67.40	88.00	78.00	104.00	65.00	200.00	87.30	92.10	65.70	100.00	71.80	84.00
18	77.40	102.00	80.00	97.50	76.10	99.70	90.20*	138.00*	84.90	99.60	77.80	106.00
19	72.90	82.30	59.30	82.30	69.00	95.70	68.30	89.20	71.40	95.20	68.70	45.50
20	92.30	135.00	97.50	117.00	73.40	115.00	96.90*	139.00*	85.50	115.00	87.80	127.00

TABLE 35 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
LAB NUMBER												
1	416.00	501.00	411.00	563.00	405.00	571.00	339.00	516.00	335.00	598.00	398.00	562.00
2	373.00	467.00	366.00	447.00	374.00	423.00	371.00	436.00	411.00	378.00	408.00	488.00
3	477.00*	639.00*	579.00*	694.00*	372.00	594.00	468.00	557.00	515.00	660.00	487.00	548.00
4	380.00	500.00	371.00	500.00	404.00	500.00	362.00	455.00	368.00	436.00	369.00	475.00
5	483.00	540.00	363.00	420.00	407.00	478.00	304.00	435.00	319.00	484.00	401.00	507.00
6	159.00	200.00	181.00	320.00	182.00*	326.00	500.00	240.00	182.00	220.00	590.00	280.00
7	491.00	615.00	643.00	615.00	532.00	485.00	554.00	795.00*	312.00	492.00	556.00	829.00*
8	356.00	481.00	367.00	429.00	416.00	523.00	377.00	292.00	397.00	349.00	443.00	528.00
9	317.00	425.00	393.00	423.00	460.00	536.00	415.00	501.00	430.00	562.00	490.00	353.00
10	386.00	412.00	194.00*	370.00*	485.00	331.00	366.00	405.00	403.00	403.00	410.00	423.00
11	380.00	548.00	408.00	474.00	388.00	482.00	465.00	403.00	466.00	433.00	481.00	454.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	420.00	514.00	443.00	551.00	452.00	514.00	359.00	501.00	411.00	520.00	450.00	552.00
14	338.00	500.00	379.00	457.00	391.00	492.00	356.00	424.00	346.00	482.00	399.00	465.00
15	378.00	470.00	379.00	472.00	364.00	465.00	360.00	466.00	378.00	469.00	356.00	439.00
16	1010.00*	1360.00*	1040.00*	1350.00*	1171.00*	1445.00*	876.00*	1066.00*	700.00*	841.00	845.00*	1202.00*
17	360.00	450.00	400.00	470.00	400.00	560.00	435.00	415.00	410.00	530.00	400.00	530.00
18	328.00	416.00	335.00	409.00	392.00	506.00	490.00*	581.00*	384.00	507.00	480.00	607.00
19	557.00	403.00	434.00	446.00	426.00	475.00	497.00	438.00	482.00	467.00	445.00	566.00
20	564.00	724.00	568.00	696.00	529.00	676.00	555.00*	728.00*	539.00	647.00	479.00	554.00

TABLE 36. RAW DATA FOR CHLOROBENZENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	9.01	10.80	7.74	11.30	7.02	9.50	16.80	0.00*	5.33	7.33	7.00	3.97
2	7.53	9.51	8.59	8.95	8.64	9.24	375.00	194.00	5.50	3.76	5.98	0.00*
3	7.76	8.78	7.30	8.68	5.03	7.14	20.00	0.00*	2.08*	3.11*	0.00*	0.00*
4	7.25	8.74	8.55	9.59	8.25	10.10	240.00	290.00	6.53	7.71	4.80	19.10
5	0.00*	12.80	6.25	7.83	9.41	8.70	0.00*	137.00	0.00*	0.00*	14.00	0.00*
6	8.89	12.10	8.00	13.20	8.67	14.70	0.00*	61.00	39.60*	13.20	0.00*	22.50
7	4.21	5.61	7.24*	12.10*	10.40	11.10	20.00	0.00*	3.70	4.75	0.00*	15.80
8	5.27	8.99	5.80	7.12	6.59	8.97	55.00	166.00	6.38	8.47	5.70	11.10
9	8.56	10.70	6.76	9.73	7.25	9.43	0.00*	0.00*	3.45	7.11	9.49	12.70
10	4.06	2.32	3.34	2.10	4.00	2.86*	53.00	144.00	4.78	4.22	16.30	0.00*
11	0.00*	15.10	0.58	13.90	2.20	12.00	0.00*	140.00	10.30	0.00*	3.90	0.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	5.19	7.08	5.54	9.55	5.06	8.28	0.00*	0.00*	8.84	11.30	0.00*	0.00*
14	10.60*	12.60*	9.47	11.60	10.40*	12.00*	40.00	70.00	7.74*	9.14*	7.20	11.00
15	8.52	11.90	8.32	9.73	8.09	11.40	0.00*	0.00*	6.00	8.42	5.50	6.60
16	8.11	8.78	8.50	10.40	9.65	10.30	0.00*	0.00*	5.50	7.51	17.40	0.00*
17	8.50	8.00	7.40	0.00*	6.80	7.30	1890.00*	1790.00*	9.20	7.60	10.00	19.00
18	6.44	8.16	3.65	3.83	3.13	24.60*	0.00*	0.00*	5.57	4.38	12.20	8.12
19	1.96	0.60	3.65	4.47	12.10	9.02	0.00*	0.00*	9.95	7.96	0.00*	0.00*
20	7.04	9.41	5.37	9.28	6.44	9.02	870.00*	160.00*	4.09	5.37	18.60*	32.30*

TABLE 36 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	82.80	110.00	86.40	115.00	76.90	109.00	20.60	0.00*	69.60	80.50	109.00	95.00
2	81.90	99.00	77.90	97.40	78.80	94.10	0.00*	329.00	80.20	90.10	106.00	52.00
3	74.20	108.00	93.10	125.00	64.80	92.40	34.00	0.00*	44.70*	59.80*	33.20	59.50
4	70.40	103.00	91.00	113.00	92.10	115.00	0.00*	0.00*	78.70	97.10	85.70	109.00
5	136.00*	132.00	64.20	78.60	131.00	113.00	236.00	374.00	58.60*	0.00*	372.00*	241.00*
6	80.50	53.00	69.50	57.60	56.10	65.90	0.00*	0.00*	56.10	57.50	61.70	38.00
7	85.30	120.00	115.00*	173.00*	64.20	77.30	0.00*	0.00*	57.70	61.30	57.50	85.50
8	73.10	85.60	67.30	84.10	72.30	98.40	256.00	237.00	61.70	87.20	106.00	93.60
9	99.60	130.00	113.00	142.00	108.00	132.00	294.00	262.00	103.00	122.00	105.00	159.00
10	87.70	106.00	85.20	81.90	99.60	132.00	407.00	213.00	78.00	116.00	105.00	119.00
11	70.50	109.00	66.60	105.00	70.60	95.50	0.00*	0.00*	82.20	118.00	71.40	98.40
12	0.00*	0.00*	0.00*	0.00*	119.00	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	76.60	114.00	76.90	101.00	84.50	99.10	0.00*	0.00*	70.40	93.30	37.80	51.30
14	97.80*	122.00*	87.40	106.00	91.90*	116.00*	110.00	70.00	94.60*	121.00*	98.10	129.00
15	77.50	94.70	73.90	91.80	73.40	90.90	3.00	0.00*	66.70	83.50	66.90	85.60
16	104.00	79.80	78.70	112.00	78.00	99.40	0.00*	33.00	83.60	101.00	73.90	86.90
17	81.50	109.00	80.40	102.00	85.80	260.00*	1790.00*	1690.00*	79.10	112.00	135.00	140.00
18	77.60	61.60	76.40	95.50	65.40	82.60	0.00*	495.00	74.00	82.40	106.00	118.00
19	57.60	75.10	50.30	75.10	61.40	82.30	0.00*	0.00*	74.60	88.40	63.50	48.20
20	82.30	115.00	90.30	109.00	85.90	55.80	520.00*	270.00*	51.50	64.90	122.00*	146.00*

TABLE 36 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00
LAB NUMBER												
1	430.00	538.00	430.00	562.00	412.00	587.00	0.00*	197.00	332.00	414.00	203.00	423.00
2	431.00	495.00	392.00	502.00	410.00	439.00	764.00	469.00	366.00	577.00	466.00	376.00
3	405.00	537.00	469.00	566.00	322.00	482.00	398.00	346.00	296.00*	366.00*	250.00	438.00
4	370.00	477.00	373.00	483.00	383.00	449.00	107.00	219.00	360.00	445.00	360.00	467.00
5	594.00	1010.00*	426.00	565.00	440.00	479.00	457.00	706.00	268.00*	251.00*	549.00	1020.00
6	277.00	300.00	315.00	386.00	315.00	400.00	0.00*	0.00*	308.00	287.00	483.00	375.00
7	532.00	567.00	766.00*	975.00*	517.00	551.00	83.00	207.00	591.00	610.00	826.00	956.00
8	353.00	419.00	357.00	416.00	360.00	467.00	523.00	256.00	366.00	366.00	391.00	490.00
9	327.00	402.00	387.00	412.00	425.00	516.00	144.00	354.00	428.00	532.00	324.00	412.00
10	293.00	330.00	312.00	293.00	396.00	251.00	414.00	443.00	285.00	367.00	286.00	328.00
11	398.00	572.00	435.00	555.00	385.00	530.00	0.00*	0.00*	454.00	531.00	444.00	529.00
12	0.00*	0.00*	692.00*	1100.00*	494.00	885.00*	0.00*	0.00*	3810.00*	1010.00*	1450.00*	1510.00*
13	386.00	529.00	428.00	511.00	406.00	481.00	0.00*	228.00	370.00	596.00	348.00	583.00
14	470.00*	656.00*	489.00	609.00	495.00*	681.00*	510.00	590.00	479.00*	624.00*	522.00	657.00
15	386.00	488.00	372.00	486.00	365.00	475.00	137.00	54.00	361.00	484.00	365.00	450.00
16	390.00	418.00	397.00	463.00	355.00	415.00	29.00	46.00	375.00	411.00	351.00	394.00
17	410.00	550.00	420.00	500.00	410.00	530.00	8790.00*	5790.00*	440.00	570.00	660.00	940.00
18	441.00	551.00	319.00	368.00	441.00	523.00	5460.00*	4480.00*	133.00	443.00	600.00	871.00
19	529.00	347.00	364.00	429.00	382.00	432.00	657.00	586.00	414.00	434.00	367.00	507.00
20	462.00	569.00	453.00	627.00	269.00	326.00	790.00*	1100.00*	333.00	445.00	770.00*	755.00*

TABLE 37. RAW DATA FOR 1,4-DICHLOROBENZENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	8.33	10.50	7.08	10.60	6.56	8.77	9.55	10.90	7.03	8.73	6.77	8.60
2	6.95	9.94	9.09	9.26	8.25	9.09	4.22	14.60	6.79	8.70	7.04	8.57
3	10.40	10.90	8.96	10.50	7.38	9.26	0.00*	0.00*	7.57	8.98	4.02	7.92
4	7.55	8.70	7.91	9.72	8.49	10.20	11.60	15.30	7.80	9.47	9.58	11.30
5	25.30*	12.80	10.80	25.60*	7.04	13.10	10.30	9.61	6.41	9.73	1.92	3.07
6	7.06	12.40	7.41	12.70	6.32	14.60	8.12	10.40	6.76	7.82	3.23	9.56
7	5.21	8.45	8.13*	9.06*	8.03	10.20	8.41	11.10	5.25	9.80	5.33	13.60
8	8.35	10.30	7.28	8.13	7.49	10.10	8.30	2.80	4.28	6.85	7.73	7.73
9	10.70	11.80	9.84	10.10	8.50	8.12	9.09	12.30	5.21	7.35	7.33	11.40
10	6.57	7.75	5.82	7.67	6.70	8.29	8.68	12.30	13.00	6.53	7.20	0.00*
11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	59.60*	0.00*	0.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	6.21	5.98	4.18	6.06	5.57	8.27	5.33	6.41	4.79	8.28	5.27	5.96
14	10.10	10.40	6.17	10.40	8.96	10.90	6.30	6.94	8.02	8.99	7.32	8.32
15	7.15	9.92	6.89	8.03	5.93	8.60	0.00*	1.25	5.89	7.66	5.74	7.72
16	2.97	3.92	2.92	9.59	5.88	12.40	4.57	10.30	3.13	4.32	9.28	8.26
17	11.00	9.80	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
18	5.52	7.11	3.36	4.05	11.90*	35.60*	7.68	9.08	13.50	22.70*	3.74	3.49
19	0.00*	5.22	6.96	6.09	17.00*	13.10	12.00	17.40	6.96	0.00*	3.48	43.50*
20	5.93	7.26	5.64	7.65	6.57	10.20	4.08	6.46	4.58	6.06	3.64	13.90

TABLE 37 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	57.40	107.00	58.20	110.00	71.80	95.60	95.30	117.00	86.00	103.00	85.10	118.00
2	82.80	105.00	79.00	99.40	81.50	94.70	94.40	134.00	74.40	103.00	99.40	91.50
3	64.80	91.60	79.40	105.00	54.00	81.10	57.50	66.40	60.50	78.50	68.60	97.20
4	71.70	106.00	88.30	111.00	92.10	117.00	76.20	100.00	82.80	102.00	83.00	110.00
5	66.30	40.10	60.50	73.70	60.90	100.00	119.00	312.00*	38.10	97.10	82.20	117.00
6	89.30	48.90	92.30	51.30	76.20	66.40	91.70	41.10	61.90	59.50	76.10	44.40
7	162.00	267.00*	237.00*	312.00*	68.60	81.70	85.50	94.70	29.40	92.20	72.40	93.40
8	73.40	86.20	70.00	86.90	76.00	101.00	70.00	94.30	60.60	83.90	102.00	103.00
9	80.00	106.00	94.30	115.00	89.00	112.00	93.70	124.00	83.00	106.00	87.90	84.90
10	142.00	160.00	165.00*	162.00	152.00*	92.70	143.00	165.00	153.00	178.00	153.00	160.00
11	117.00	158.00	98.50	163.00	114.00	155.00*	96.90	111.00	120.00	151.00	113.00	112.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	74.60	95.30	78.00	91.80	79.80	83.20	86.10	105.00	77.50	91.20	79.70	82.60
14	80.50	102.00	75.00	94.00	59.60	104.00	79.10	104.00	82.70	111.00	86.80	113.00
15	66.20	85.40	62.70	74.80	59.10	72.60	50.70	63.10	59.70	75.50	50.60	68.40
16	103.00	82.50	82.20	109.00	82.50	109.00	83.60	88.40	74.10	91.90	68.80	88.70
17	85.00	107.00	82.00	41.70	68.20	330.00*	94.80	115.00	109.00	165.00	0.00*	98.80
18	38.90	24.90	74.30	97.90	65.10	81.00	10.00	127.00	61.90	81.90	154.00	91.10
19	12.20	13.90	8.70*	13.90	10.40*	19.10*	3.48	12.20	13.90	15.70	11.30	12.20
20	73.70	97.70	85.80	104.00	95.10	113.00	82.90	111.00	63.50	83.30	128.00	172.00

TABLE 37 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00
LAB NUMBER												
1	282.00	321.00	281.00	324.00	245.00	344.00	290.00	336.00	254.00	357.00	295.00	339.00
2	274.00	345.00	259.00	335.00	256.00	351.00	260.00	368.00	332.00	396.00	279.00	280.00
3	235.00	301.00	287.00	350.00	221.00	295.00	237.00	265.00	228.00	302.00	219.00	253.00
4	263.00	333.00	261.00	334.00	270.00	333.00	284.00	356.00	268.00	335.00	264.00	344.00
5	247.00	308.00	241.00	335.00	496.00	631.00	242.00	301.00	232.00	268.00	243.00	371.00
6	200.00	260.00	298.00	300.00	283.00	373.00	285.00	357.00	280.00	314.00	429.00	311.00
7	400.00	368.00	408.00*	704.00*	306.00	341.00	320.00	451.00	338.00	376.00	440.00	491.00
8	251.00	289.00	260.00	300.00	269.00	323.00	234.00	201.00	255.00	263.00	279.00	347.00
9	219.00	284.00	271.00	290.00	297.00	369.00	301.00	395.00	311.00	385.00	227.00	288.00
10	205.00	353.00	263.00	418.00	205.00	332.00	200.00	335.00	232.00	342.00	256.00	310.00
11	390.00	465.00*	273.00	479.00	281.00	473.00	349.00	368.00	315.00	432.00	427.00	473.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	304.00	383.00	318.00	377.00	322.00	378.00	260.00	339.00	287.00	370.00	273.00	370.00
14	259.00	351.00	247.00	273.00	284.00	321.00	234.00	293.00	247.00	348.00	252.00	356.00
15	243.00	294.00	219.00	296.00	210.00	270.00	214.00	271.00	205.00	282.00	192.00	231.00
16	290.00	346.00	285.00	363.00	277.00	338.00	269.00	347.00	247.00	308.00	271.00	336.00
17	290.00	350.00	300.00	360.00	330.00	400.00	300.00	250.00	450.00	470.00	350.00	480.00
18	233.00	330.00	221.00	270.00	240.00	294.00	289.00	321.00	95.40	247.00	635.00	713.00
19	662.00*	515.00*	184.00	625.00*	515.00	588.00	515.00*	662.00*	551.00*	588.00*	441.00	698.00
20	272.00	347.00	306.00	372.00	359.00	455.00	384.00	408.00	259.00	326.00	632.00	591.00

TABLE 38. RAW DATA FOR METHYLENE CHLORIDE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.36	10.40	7.89	9.98	7.71	10.20	9.49	11.40	10.10	9.00	9.72	10.70
2	7.70	6.20	5.99	9.06	8.30	7.80	6.55	6.33	5.74	7.79	7.10	7.72
3	6.56	8.36	12.00	13.40	6.48	8.83	6.17	8.89	8.00	10.00	5.18	7.06
4	8.00	10.80	10.60	16.20	13.20*	17.20*	7.51	12.00	8.49	10.30	8.81	9.68
5	7.21	9.62	7.01	26.50*	2.58	0.00*	0.00*	5.00	12.60	15.60	17.90	10.40
6	9.43	*	7.92	*	7.17	*	10.40	*	11.70	*	9.82	*
7	8.60	11.00	9.04	8.37	6.24	6.76	6.92	9.29	9.83	10.00	7.53	7.60
8	3.45	5.23	4.12*	5.78*	3.57	5.71	4.23	5.09	5.10	7.18	5.65	6.82
9	7.22	11.80	6.38	11.30	6.44	7.70	7.25	8.03	7.23	8.37	6.92	10.60
10	1.65	2.36	0.14	2.65	1.76	2.49	1.56	2.75	1.45*	3.83*	1.42	2.95
11	2.81	4.10	4.28	5.86	12.60	15.50	3.74	6.29	4.77	6.26	5.28	6.33
12	5.67	6.75	5.24	5.61	4.82	6.22	5.69	1.16	4.80	6.40	12.70	9.04
13	5.05	10.10	7.45	13.70	4.05	9.01	4.85	11.10	3.67	9.57	2.79	7.67
14	11.20*	13.40*	10.40	9.00	9.30*	16.50*	11.40	12.80	11.50	13.20	10.90	11.20
15	7.34	9.64	7.71	8.01	6.95	10.90	8.04	9.42	7.32	10.80	0.00*	0.00*
16	16.80*	13.90	4.82	9.05	9.02	1.72	4.57*	4.87*	5.12	71.80*	12.70	22.40*
17	0.00*	0.00*	1.80	3.20	1.30	2.30	4.34	5.95	5.20	7.10	4.53	13.40
18	2.95	3.67	1.81	0.86	0.00*	0.00*	6.23	7.93	12.20	10.10	5.32	5.97
19	11.40	191.00*	37.00*	8.34	0.00*	17.50	46.70*	11.80*	8.73	6.93	197.00*	0.00*
20	9.60*	16.50*	0.00*	0.74	3.73	6.18	5.03	8.90	5.51	7.54	5.81	6.99

TABLE 38 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	41.70	53.10	42.50	50.70	42.30	50.90	47.00	58.20	45.20	56.10	36.10	47.20
2	38.70	44.70	35.50	45.70	29.50	38.80	33.20	42.20	30.80	41.50	33.70	40.50
3	53.60	49.40	59.00*	47.10	39.80	37.10	36.60	38.40	39.70	38.80	62.00	27.50
4	39.60	48.20	36.60	46.60	51.30*	56.00*	48.70	58.40	40.40	53.50	43.80	55.30
5	35.40	45.50	38.40	45.50	37.70	48.50	34.70	54.70	14.60	20.70	33.20	56.30
6	37.50	47.90	39.60	45.80	35.40	40.60	40.60	52.10	35.40	48.90	37.50	45.80
7	33.70	38.60	32.60	36.30	33.00	50.60	31.70	43.50	31.90	38.40	24.50	29.60
8	28.50	34.00	28.50*	33.20*	24.80	31.90	31.30	41.80	30.80	51.70	26.70	34.80
9	42.30	56.90	46.30	59.20	43.80	56.90	42.40	50.70	45.30	57.00	38.10	54.20
10	25.10	35.00	28.20	33.60	21.90	35.90	25.00	36.50	25.00*	37.50*	30.80	40.80
11	29.20	52.00	29.70	44.10	43.60	41.40	26.00	41.50	27.30	41.90	31.40	40.10
12	31.30	34.50	31.30	36.80	41.60	44.50	29.20	38.10	35.70	36.20	103.00*	23.00
13	42.60	48.80	43.40	52.00	44.40	55.90	40.70	53.10	66.70	51.20	58.50	57.50
14	49.20*	54.20*	44.00	51.10	48.90*	57.90*	45.80	50.20	61.00	58.20	47.20	61.80
15	42.20	52.60	40.70	50.50	46.10	54.20	47.30	58.20	46.60	67.10	34.40	57.90
16	24.40	28.80	79.40*	34.20	29.10	36.60	20.20*	23.30*	24.20	58.80	41.60	27.10
17	23.70	36.90	33.40	46.00	28.00	43.60	39.20	50.90	52.80	67.50	51.90	62.90
18	17.80	24.90	35.80	34.40	0.00*	0.00*	62.80	60.20	29.00	46.30	37.90	51.90
19	0.00*	0.00*	33.10	50.60	0.00*	0.00*	48.20*	56.60*	36.40	48.40	11.70	36.20
20	45.40*	68.10*	29.40	46.50	49.80	68.30	51.00	60.20	147.00*	65.00	47.30	79.00

TABLE 38 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00
LAB NUMBER												
1	459.00	540.00	445.00	493.00	477.00	521.00	243.00	338.00	255.00	356.00	192.00*	302.00
2	410.00	412.00	374.00	254.00	329.00	424.00	280.00	487.00	334.00	447.00	337.00	375.00
3	346.00	504.00	467.00	568.00	397.00	537.00	364.00	386.00	393.00	637.00	447.00	557.00
4	423.00	510.00	429.00	520.00	433.00*	539.00*	376.00	482.00	388.00	465.00	392.00	498.00
5	261.00	376.00	288.00	410.00	391.00	563.00	301.00	410.00	319.00	454.00	304.00	409.00
6	364.00	424.00	408.00	424.00	378.00	331.00*	439.00	486.00	962.00*	398.00	403.00	506.00
7	502.00	556.00	503.00	459.00	510.00	531.00	550.00	513.00	405.00	535.00	430.00	454.00
8	385.00	407.00	291.00*	418.00*	302.00	521.00	341.00	329.00	300.00	423.00	361.00	367.00
9	498.00	681.00	555.00	661.00	463.00	502.00	467.00	684.00	477.00	588.00	445.00	612.00
10	434.00	497.00	413.00	529.00	427.00	544.00	438.00	522.00	364.00*	408.00*	417.00	442.00
11	322.00	446.00	340.00	402.00	348.00	486.00	345.00	417.00	358.00	449.00	341.00	470.00
12	303.00	385.00	327.00	431.00	415.00	518.00	434.00	522.00	337.00	521.00	420.00	506.00
13	350.00	583.00	376.00	530.00	347.00	538.00	347.00	563.00	356.00	537.00	334.00	518.00
14	450.00*	564.00*	466.00	579.00	454.00*	564.00*	473.00	516.00	421.00	472.00	429.00	517.00
15	421.00	525.00	423.00	529.00	441.00	551.00	451.00	569.00	446.00	556.00	434.00	522.00
16	136.00	152.00*	145.00	115.00*	82.50*	91.20*	80.50*	76.60*	64.70*	65.50*	69.60*	74.10*
17	370.00	405.00	380.00	430.00	377.00	423.00	395.00	442.00	460.00	486.00	399.00	450.00
18	218.00	501.00	351.00	459.00	360.00*	488.00*	454.00	565.00	433.00	641.00	392.00	429.00
19	337.00	449.00	414.00	543.00	298.00	459.00	492.00*	568.00*	418.00	595.00	359.00	525.00
20	758.00*	1120.00*	710.00	989.00*	915.00*	1150.00*	940.00*	1220.00*	843.00*	1170.00*	876.00*	1140.00*

TABLE 39. RAW DATA FOR 1,1-DICHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	6.70	9.05	6.98	8.61	7.47	9.00	6.45	9.25	8.11	8.26	8.90	9.03
2	6.85	7.91	4.28	7.09	6.07	6.13	5.02*	4.17*	3.63*	6.79*	5.85	7.24
3	9.86	12.60	9.75*	13.30*	2.71	8.82	7.04	8.61	6.30	8.17	6.04	8.38
4	7.76	10.20	8.10	10.20	8.67	10.50	8.07	10.20	8.42	10.40	8.22	10.60
5	7.66	9.33	7.08	9.29	8.28	10.70	8.78	10.80	9.81	11.40	8.43	10.90
6	7.62	*	7.30	*	6.35	*	8.73	*	8.57	*	8.41	*
7	3.89	7.46	6.02	8.72	3.95	6.76	4.99	7.87	9.32	9.57	7.93	7.17
8	5.42	6.53	5.29	8.65	4.12	6.63	7.04	6.84	5.63	10.50	6.43	6.74
9	6.20	9.56	5.12	8.70	5.34	6.43	6.48	7.17	5.41	8.12	5.96	9.62
10	0.55*	0.82	0.48	0.99	1.00	0.77*	0.56*	0.96	0.65	1.11*	0.60*	0.96*
11	5.21	6.69	5.31	6.96	5.45	7.41	6.01	8.71	5.73	8.33	6.75	8.37
12	5.30	6.79	6.05	6.55	5.75	7.24	7.09	1.39	5.55	8.67	7.89	9.07
13	5.72	10.60	6.48	10.90	6.44	11.00	6.92	12.00	4.47	11.70	6.44	10.40
14	6.79	8.57	7.52*	11.20*	7.28	11.40	9.07	9.88	8.46	10.60	7.99	9.88
15	7.32	9.31	6.66	8.44	7.31	10.30	8.35	10.10	7.91	10.90	8.57	10.90
16	8.19	8.67	6.08	8.07	7.58	7.23	5.84*	6.95*	4.71*	6.00*	9.20	6.62
17	0.00*	2.00	1.90	4.20	2.80	4.70	5.71	7.43	6.20	8.20	5.67	6.56
18	6.80	7.66	4.44	5.80	5.98	7.73	4.23	5.88	13.90	23.50*	5.24	5.90
19	19.60*	7.17	7.75	5.26	6.28	8.78	7.23	7.01	7.58	8.54	6.78	7.17
20	7.73	9.94	2.32	4.27	7.22	8.77	7.81	10.30	7.50	9.30	9.50*	11.60*

TABLE 39 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	39.80	49.60	42.40	47.80	41.20	49.00	38.60	36.10	33.70	37.90	36.70	45.40
2	34.20	48.60	30.60	34.10	21.70	36.90	28.40*	36.10*	28.30*	36.70*	28.50	36.40
3	50.40	74.90*	47.00*	67.10*	47.00	66.90	46.50	39.00	45.60	24.10	46.00	31.10
4	35.70	44.50	35.00	44.10	41.70	46.90	40.80	50.30	38.00	50.70	40.60	51.50
5	35.00	43.60	35.60	45.30	35.90	47.70	38.30	48.40	36.20	46.80	37.30	48.10
6	35.10	44.60	37.60	43.60	35.60	43.60	34.70	47.50	27.70	46.50	34.60	46.50
7	52.90	54.50	55.10*	68.30	44.70	58.30	49.60	66.50	49.60	47.50	46.50	58.80
8	34.60	40.80	36.70	43.60	30.10	40.90	41.10	45.50	39.20	50.60	34.20	42.60
9	36.70	53.30	40.30	50.70	39.30	51.60	38.00	48.80	39.70	52.10	33.60	48.60
10	21.10	29.90	25.30	24.80	18.60	32.20	19.80*	28.50	21.50	32.00	18.30*	21.50
11	33.90	56.30	32.80	50.00	37.40	44.60	36.00	49.50	33.20	48.00	36.70	51.70
12	30.60	37.00	33.20	38.90	26.00	36.30	31.20	42.60	29.20	42.50	31.70	63.20
13	42.50	46.70	44.90	53.40	44.00	55.70	42.70	57.20	40.40	53.00	47.00	55.20
14	42.30	51.60	45.20*	51.50*	42.30	50.70	43.50	52.30	50.40	50.00	43.20	55.00
15	37.10	47.90	38.80	47.40	41.70	53.60	43.00	44.80	38.60	61.20	41.00	50.60
16	35.60	32.80	27.50	42.20	36.00	45.80	24.50*	31.40*	32.10*	45.40*	35.30	35.50
17	31.20	44.80	34.70	44.00	36.00	50.00	39.00	53.90	51.50	63.60	41.70	55.10
18	53.50	143.00*	36.60	46.90	33.30	50.70	29.40	77.90	36.10	47.70	37.40	49.40
19	39.10	45.70	26.90	40.10	36.50	44.00	36.60	47.20	30.30	41.00	36.40	50.80
20	39.10	52.80	35.60	48.40	39.00	52.60	42.70	50.50	40.10	49.90	47.70*	58.00*

TABLE 39 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
LAB NUMBER												
1	435.00	470.00	437.00	402.00	458.00	444.00	160.00*	223.00	171.00*	270.00	171.00*	245.00
2	320.00	429.00	317.00	195.00	283.00	348.00	237.00*	349.00*	288.00*	356.00*	311.00	326.00
3	361.00	574.00	480.00*	565.00*	418.00	573.00	378.00	393.00	398.00	644.00	450.00	559.00
4	395.00	481.00	420.00	500.00	420.00	511.00	380.00	460.00	380.00	455.00	368.00	462.00
5	336.00	417.00	346.00	432.00	344.00	437.00	341.00	446.00	395.00	489.00	360.00	439.00
6	274.00	375.00	386.00	410.00	381.00	415.00	427.00	473.00	392.00	415.00	421.00	496.00
7	363.00	413.00	445.00	418.00	360.00	419.00	395.00	405.00	351.00	369.00	383.00	405.00
8	380.00	390.00	276.00	387.00	276.00	367.00	315.00	308.00	285.00	390.00	341.00	343.00
9	506.00	659.00*	535.00	664.00	400.00	474.00	407.00	612.00	426.00	527.00	403.00	540.00
10	415.00	460.00	418.00	485.00	486.00	544.00	427.00	408.00	400.00	364.00	370.00	482.00
11	323.00	457.00	364.00	433.00	354.00	485.00	372.00	430.00	381.00	463.00	361.00	481.00
12	321.00	413.00	329.00	427.00	416.00	515.00	443.00	538.00	344.00	523.00	404.00	490.00
13	354.00	499.00	335.00	476.00	341.00	453.00	348.00	489.00	303.00	492.00	327.00	465.00
14	442.00	508.00	447.00*	528.00*	430.00	520.00	426.00	456.00	394.00	443.00	370.00	490.00
15	376.00	483.00	386.00	491.00	391.00	496.00	439.00	566.00	409.00	531.00	410.00	510.00
16	157.00*	170.00*	163.00*	162.00	184.00*	172.00*	129.00*	125.00*	155.00*	160.00*	115.00*	124.00*
17	393.00	450.00	400.00	450.00	410.00	462.00	420.00	469.00	471.00	524.00	488.00	465.00
18	475.00	492.00	437.00	483.00	387.00	514.00	452.00	522.00	427.00	600.00	422.00	510.00
19	403.00	509.00	417.00	519.00	380.00	519.00	472.00	567.00	437.00	583.00	355.00	581.00
20	404.00	524.00	390.00	482.00	405.00	489.00	408.00	527.00	385.00	495.00	437.00*	512.00*

TABLE 40. RAW DATA FOR 1,2-DICHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.11	9.59	7.65	9.52	7.59	9.80	3.53	3.24	8.47	8.42	0.00*	0.00*
2	7.37	8.26	7.45	9.51	5.62	7.46	7.30	13.70	6.73	7.04	0.00*	37.00
3	11.10*	14.20*	8.61	24.50*	8.92*	11.40*	6.86	7.21	8.50	11.10	132.00	157.00
4	8.61	11.10	9.56	11.90	8.15	10.30	0.00*	3.55	7.99	10.00	0.00*	0.00*
5	7.84	9.61	5.29	7.74	6.46	12.60	15.80	0.00*	11.10	14.00	20.10	0.00*
6	7.79	*	6.47	*	6.76	*	0.00*	*	8.53	*	72.00	*
7	5.38	9.36	7.83	11.90	5.68	6.48	10.00	7.00	12.00	8.83	25.00	0.00*
8	5.29	6.92	4.92	12.50	7.37	10.40	61.90	37.90	6.28	8.66	189.00*	132.00*
9	5.74	11.20	21.80*	8.55*	6.08	6.76	25.50	12.30	6.99	90.40*	0.00*	67.60
10	1.64*	2.36*	8.73	2.41	1.78	2.31	1.60	0.00*	2.34*	3.93*	0.00*	15.00
11	5.67	11.60	5.35	10.40	5.33	9.41	0.00*	0.00*	4.69	8.02	0.00*	0.00*
12	7.02	4.50	8.02	10.40	6.49	5.10	0.00*	0.00*	5.00	6.75	19.00	0.00*
13	6.87	11.50	6.75	10.60	7.00	12.50	40.60	32.40	8.69	14.80	0.00*	0.00*
14	7.83	9.98	10.20	14.50	8.04	12.50	48.00	2.00	9.78	11.90	42.00	52.00
15	5.04*	6.90*	5.41	8.00	5.02	7.29	23.00	26.00	4.93	7.68	160.00	108.00
16	9.86	10.86	5.00*	6.71*	8.38	8.70	0.00*	0.00*	4.59*	4.95*	5.00	5.00
17	2.40	4.30	3.70	6.10	4.30	6.30	6.60	8.81	13.00	13.00	4.00	7.00
18	7.21	12.90	0.00*	0.00*	3.08	4.56	0.00*	0.00*	13.00	25.70*	0.00*	0.00*
19	22.70*	10.60	12.00	9.72	8.40	9.92	27.00	34.00	8.77	9.16	0.00*	0.00*
20	10.90	13.10	12.60	15.30	7.26	9.34	17.00	15.00	7.67	10.00	0.00*	0.00*

TABLE 40 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	41.60	50.40	44.00	48.10	43.60	49.60	9.56	0.00*	37.40	41.60	0.00*	0.00*
2	35.70	42.70	33.30	46.40	32.20	41.60	10.50	24.90	25.60	41.80	49.10	0.00*
3	54.50*	79.60*	44.90	90.20*	51.40*	53.30*	28.00	10.90	49.90	53.30	188.00*	32.00
4	39.10	49.30	37.10	47.60	42.80	48.70	28.00	30.00	35.50	50.00	0.00*	0.00*
5	40.00	47.90	35.60	42.90	44.10	52.00	37.00	66.30	43.80	54.00	41.70	110.00
6	40.20	48.00	41.20	48.00	37.30	45.10	56.00	39.00	32.30	48.00	22.50	47.00
7	33.10	43.90	47.40	53.30	32.30	49.40	44.00	64.00	35.50	41.60	0.00*	12.00
8	33.40	41.00	37.10	46.50	31.30	41.70	74.90	38.90	37.70	49.30	228.00*	394.00*
9	41.00	58.80	67.20*	79.80*	42.80	57.60	64.80	61.80	46.30	58.60	0.00*	49.70
10	23.70*	30.80*	23.00	29.50	18.30*	31.00	92.10	43.50	21.10*	27.00*	75.00	40.20
11	37.40	76.20	38.10	59.10	40.30	46.30	0.00*	0.00*	38.10	49.40	0.00*	0.00*
12	49.70	61.20	60.20	66.90	31.10	51.70	0.00*	2.00	42.10	45.50	0.00*	87.00
13	43.20	52.00	46.60	52.30	47.60	57.60	40.30	65.10	47.30	51.80	13.70	0.00*
14	47.70	58.80	50.10	56.40	45.30	54.50	44.00	54.00	56.50	55.40	49.00	71.00
15	29.40*	43.40*	34.40	61.80	31.90	54.60	62.00	62.00	47.10	67.20	0.00*	0.00*
16	36.20	32.40	28.50*	42.70*	39.40	47.90	0.00*	3.70*	32.30*	47.70*	31.00	2.00
17	40.00	55.80	41.00	51.60	44.80	60.80	41.10	55.40	23.00	26.00	0.00*	5.00
18	48.80	65.00	21.90*	41.60*	33.80	64.60	28.00	65.00	4.33*	7.25*	0.00*	0.00*
19	42.20	49.00	33.00	49.50	40.70	47.60	63.00	66.00	36.50	44.60	0.00*	0.00*
20	48.30	60.50	43.50	59.70	41.80	55.60	34.00	49.00	47.70	57.30	0.00*	0.00*

TABLE 40 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
LAB NUMBER												
1	450.00	681.00	482.00	618.00	506.00	653.00	28.50*	52.10	154.00*	225.00	0.00*	47.20
2	320.00	499.00	312.00	362.00	220.00	375.00	275.00	310.00	326.00	374.00	526.00	435.00
3	442.00*	627.00*	537.00	608.00	450.00*	617.00*	376.00	363.00	410.00	666.00	562.00	622.00
4	413.00	496.00	422.00	507.00	415.00	512.00	339.00	404.00	375.00	449.00	362.00	479.00
5	347.00	428.00	352.00	406.00	356.00	432.00	337.00	478.00	391.00	465.00	516.00	658.00
6	278.00	407.00	391.00	413.00	375.00	413.00	524.00	621.00	396.00	423.00	927.00	1000.00
7	410.00	531.00	546.00	564.00	437.00	565.00	455.00	446.00	335.00	421.00	146.00	171.00
8	372.00	401.00	285.00	407.00	291.00	410.00	348.00	328.00	290.00	404.00	560.00*	510.00*
9	500.00	652.00	580.00*	735.00*	415.00	517.00	444.00	639.00	427.00	530.00	459.00	610.00
10	388.00*	437.00*	398.00	452.00	435.00	438.00	374.00	480.00	348.00*	386.00*	475.00	536.00
11	323.00	446.00	348.00	397.00	323.00	469.00	275.00*	316.00*	347.00	426.00	238.00	0.00*
12	431.00	638.00	541.00	658.00	592.00	670.00	651.00	828.00	477.00	759.00	474.00	644.00
13	371.00	547.00	367.00	515.00	366.00	550.00	366.00	584.00	341.00	517.00	89.90	2.76
14	467.00	559.00	475.00	600.00	428.00	592.00	500.00	476.00	427.00	506.00	552.00	702.00
15	317.00*	385.00*	364.00	388.00	339.00	384.00	250.00	663.00	333.00	406.00	334.00	373.00
16	154.00*	160.00*	155.00*	149.00*	148.00	162.00*	56.10*	54.10*	152.00*	158.00*	5.00	11.00
17	440.00	490.00	425.00	490.00	450.00	513.00	429.00	480.00	566.00*	578.00	814.00	436.00
18	470.00	465.00	380.00*	400.00*	369.00	494.00	301.00	621.00	394.00	547.00	0.00*	0.00*
19	385.00	488.00	377.00	504.00	372.00	504.00	455.00	540.00	424.00	542.00	680.00	164.00
20	445.00	617.00	475.00	578.00	440.00	539.00	395.00	542.00	430.00	540.00	107.00	56.00

TABLE 41. RAW DATA FOR BROMODICHLOROMETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	6.97	9.14	7.28	9.05	7.47	9.38	7.03	9.14	7.78	8.19	21.10	10.80
2	9.80	11.60	5.33	10.70	7.03	8.58	1.54*	2.80*	3.30*	4.15*	3.90*	4.28*
3	20.00*	15.60*	14.80*	19.40*	8.70*	11.40*	13.50	16.50	9.78	11.90	6.99	10.70
4	10.30	13.90	10.40	13.00	9.20	10.90	4.36	6.88	10.10	12.10	4.53	6.02
5	7.38	9.57	9.29	12.40	8.07	13.10	7.82	10.10	8.68	11.20	7.84	10.20
6	13.30	*	37.60*	*	10.80	*	20.00	*	13.60	*	10.00	*
7	12.30	15.50	0.00*	0.00*	12.50	14.00	14.80	15.10	13.50	14.10	5.00	2.90
8	5.15	6.83	4.20	9.80	0.00*	8.20*	12.70	7.78	5.57	11.70	10.00	6.48
9	5.84	9.85	12.30*	23.10*	5.40	6.68	11.40	12.50	6.24	8.10	19.50	27.60*
10	0.90*	1.29*	0.00*	4.97	0.79*	1.23*	1.03	2.57	0.86*	1.53*	11.30	2.24
11	4.65	7.19	16.70	23.10	5.84	8.89	6.78	11.40	6.29	9.48	8.94	11.70
12	0.00*	0.00*	0.00*	0.00*	2.85	0.00*	17.10	0.00*	0.00*	0.00*	59.30*	66.00*
13	6.99	12.40	12.50	26.10	7.15	12.90	1.37	10.10	7.98	17.60	0.70	8.87
14	7.30	9.06	8.74	13.50	7.91	10.50	7.81	8.81	5.86	8.16	6.21	9.88
15	7.24	9.12	6.80	9.20	7.33	10.30	8.22	10.30	8.30	11.10	8.87	11.10
16	6.74	6.56	7.10	8.60	6.34	4.89	1.16*	1.61*	5.77	3.64	13.60	10.50
17	0.00*	3.30	3.20	5.10	3.30	5.70	5.10	7.30	9.90*	12.40*	9.96	11.00
18	6.75	7.33	3.44	5.74	4.63	5.61	7.00	8.75	2.10	27.70*	18.00	21.80*
19	20.70*	7.15	13.60	11.20	7.12	9.55	13.90	12.20	7.75	7.80	8.97	9.44
20	10.40	11.60	12.40*	15.20*	7.47	9.42	8.20	13.20	7.59	10.40	12.20	13.10

TABLE 41 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
LAB NUMBER												
1	45.90	59.20	48.30	53.30	48.10	57.70	59.80	52.20	50.20	52.10	63.20	63.60
2	45.60	49.90	40.60	45.00	43.00	50.30	13.70*	12.50*	19.60*	22.40*	19.80*	22.70*
3	73.60*	94.10*	71.00*	100.00*	67.10*	64.00*	75.70	54.10	65.90	65.10	72.60	38.70
4	50.60	51.50	42.40	47.00	54.60	58.30	45.00	48.30	41.50	48.90	51.00	55.50
5	46.70	51.80	45.90	52.60	45.30	51.60	49.30	54.20	48.10	56.30	43.90	50.50
6	52.00	52.00	54.10	51.40	49.30	50.70	45.30	60.00	44.00	53.30	46.70	56.00
7	40.30	40.20	53.20	18.00	41.10	48.30	29.50	28.80	39.30	42.40	25.00	45.50
8	42.70	46.50	45.30	49.10	36.20*	49.90*	60.80	50.70	47.60	61.00	57.40	56.10
9	55.00	73.10	76.70*	87.50*	59.70	69.80	48.60	59.90	61.30	73.00	47.10	59.10
10	26.70*	31.40*	30.40	25.00	26.60*	34.10*	27.30	34.90	23.80*	38.30*	24.30	38.10
11	45.70	70.50	52.10	71.50	53.00	51.90	51.70	52.20	51.40	57.80	55.50	62.50
12	77.80*	79.90	65.60	73.40	33.60	59.50	77.30	117.00*	55.00	39.00	73.00*	78.30*
13	55.60	57.40	33.00	67.90	56.80	64.40	50.10	56.70	30.00	62.90	20.80	54.60
14	54.60	61.60	58.30	58.50	54.70	62.60	52.70	58.00	63.30	56.40	64.80	62.90
15	47.60	57.80	56.50	62.40	58.10	65.10	59.10	68.10	61.90	78.00	57.40	77.50
16	47.00	42.20	32.80	55.80	55.90	59.30	30.10*	35.00*	51.20	54.80	42.40	41.40
17	47.80	54.00	49.00	59.50	56.30	65.00	48.80	58.80	75.00*	83.20*	54.40	74.30
18	69.00	77.70	48.30	54.40	41.40	51.70	65.30	79.00	44.30	46.50	43.60	75.20
19	54.10	56.70	44.70	58.70	51.00	54.50	54.20	60.30	42.00	49.40	51.30	63.50
20	62.10	75.00	72.00*	79.90*	59.00	69.30	57.60	60.20	57.30	61.70	57.80	54.70

TABLE 41 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00
LAB NUMBER												
1	444.00	596.00	452.00	544.00	453.00	554.00	224.00	294.00	247.00	363.00	224.00	294.00
2	333.00	471.00	315.00	356.00	255.00	417.00	249.00*	320.00*	283.00*	389.00*	233.00*	352.00*
3	511.00*	678.00*	563.00*	662.00*	479.00*	660.00*	414.00	438.00	604.00	718.00	497.00	655.00
4	427.00	535.00	442.00	530.00	439.00	546.00	371.00	468.00	383.00	470.00	388.00	504.00
5	353.00	445.00	345.00	444.00	356.00	441.00	350.00	449.00	376.00	472.00	341.00	417.00
6	300.00	410.00	386.00	386.00	373.00	388.00	402.00	446.00	380.00	395.00	402.00	439.00
7	334.00	443.00	456.00	403.00	404.00	520.00	408.00	452.00	326.00	406.00	323.00	477.00
8	366.00	398.00	283.00	404.00	286.00*	415.00*	324.00	318.00	295.00	412.00	347.00	350.00
9	503.00	663.00	569.00*	735.00*	518.00	528.00	535.00	809.00	560.00	701.00	548.00	736.00
10	364.00*	404.00*	367.00	425.00	379.00*	389.00*	365.00	457.00	342.00*	385.00*	426.00	479.00
11	317.00	451.00	362.00	409.00	330.00	483.00	346.00	410.00	356.00	449.00	392.00	522.00
12	521.00	838.00	707.00*	907.00*	719.00*	848.00	1190.00*	1490.00*	634.00	1020.00*	859.00*	854.00*
13	382.00	524.00	361.00	521.00	379.00	591.00	375.00	506.00	338.00	527.00	328.00	496.00
14	522.00	578.00	492.00	595.00	423.00	583.00	480.00	546.00	432.00	528.00	412.00	524.00
15	323.00	373.00	325.00	425.00	335.00	429.00	345.00	462.00	333.00	447.00	343.00	423.00
16	261.00	276.00	262.00	227.00	291.00	224.00	166.00*	171.00*	249.00	266.00	155.00	178.00
17	430.00	500.00	440.00	500.00	460.00	528.00	431.00	488.00	521.00*	574.00*	464.00	500.00
18	494.00	478.00	396.00	446.00	369.00	474.00	680.00*	820.00	1110.00*	1680.00*	392.00	472.00
19	379.00	487.00	371.00	487.00	359.00	487.00	432.00	542.00	414.00	523.00	348.00	518.00
20	517.00	758.00	596.00*	750.00*	523.00	655.00	491.00	673.00	488.00	620.00	500.00	530.00

TABLE 42. RAW DATA FOR 1,2-DICHLOROPROPANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.28	11.50	7.88	11.50	7.46	11.40	15.40	16.00	11.00	8.61	0.00*	0.00*
2	7.40	8.38	7.29	9.89	6.53	8.79	2.13	0.00*	4.90*	6.12*	4.47*	6.20*
3	1.64	11.50	8.41	15.20	7.07	9.12	0.00*	4.00	5.79	7.56	0.99	7.15
4	8.89	11.80	9.87	12.60	9.23	11.40	24.10	30.80	9.04	11.80	13.40	15.90
5	*	*	*	*	*	*	*	*	*	*	*	*
6	8.85	*	7.66	*	7.54	*	183.00*	*	9.67	*	8.69	*
7	7.60	16.40	8.50	11.70	7.72	12.30	0.00*	0.00*	12.30	10.40	14.80	5.90
8	7.63	9.99	9.27	13.30	6.87	10.10	0.00*	0.00*	7.72	12.60	18.00	10.70
9	9.53*	16.80*	17.60*	26.30*	9.74*	12.80*	45.70*	29.20*	8.65*	11.70*	21.80*	41.10*
10	3.09	4.17	3.93	5.06	2.68	3.37	3.54	5.14	1.19	3.40	1.50	0.00*
11	*	*	*	*	*	*	*	*	*	*	*	*
12	1.95	2.13	0.00*	0.00*	2.86	2.30	0.00*	0.00*	2.53	2.68	37.50*	64.50*
13	6.54	11.70	7.00	14.20	7.06	13.60	6.53	8.83	6.20	15.00	0.00*	0.79
14	6.76	8.16	7.73	11.60	7.03	10.60	29.80	21.80	7.22	9.68	10.30	15.10
15	7.36	9.43	6.31	8.18	7.54	10.60	0.00*	0.00*	7.55	10.90	8.80	10.70
16	12.60	15.50	9.92	15.30	10.40	8.10	22.80	6.99	9.72	6.89	15.40	17.60
17	0.00*	0.00*	2.10*	3.72*	2.10*	2.90*	10.40	12.46	2.00	14.60	14.50	12.50
18	4.26*	1.95*	0.72*	4.96*	4.83	6.50	0.34	0.48	2.50	26.00*	0.00*	0.00*
19	44.70*	14.60	19.50*	15.70	12.70*	21.80*	0.00*	0.00*	17.90	14.40	15.10	27.90
20	12.70	13.50	13.60	16.90	10.50*	12.70*	13.00*	13.00*	7.93	9.66	5.70	7.20

TABLE 42 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	59.40	59.90	62.70	62.60	61.30	65.50	89.00	104.00	71.60	156.00	87.20	79.70
2	34.60	77.60	19.30*	70.50	29.30	70.40	19.80	48.70	24.40*	59.30*	26.50*	51.20*
3	70.60	132.00	71.40	138.00	64.50	98.20	25.00	37.00	59.80	99.40	64.20	57.40
4	57.20	96.40	56.60	135.00	64.40	104.00	74.40	118.00	55.20	103.00	59.00	104.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	60.00	100.00	64.40	96.70	61.10	94.40	66.70	111.00	52.20	100.00	64.40	97.00
7	80.30	138.00	51.50	90.20	56.60	99.10	66.10	96.00	84.90	65.90	50.80	176.00
8	76.90	117.00	84.20	120.00	73.20	107.00	162.00*	131.00	87.60	135.00	87.40	135.00
9	111.00*	203.00*	152.00*	231.00*	132.00*	211.00*	201.00*	232.00*	129.00*	210.00*	94.60*	187.00*
10	61.50	89.80	65.60	112.00	57.30	109.00	67.00	94.10	55.60	92.00	59.20	88.90
11	*	*	*	*	*	*	*	*	*	*	*	*
12	89.50	124.00	0.00*	98.00	61.50	97.50	0.00*	110.00	64.00	78.00	103.00*	196.00*
13	64.00	98.80	63.80	96.50	61.50	107.00	56.80	94.80	75.20	98.70	57.80	79.50
14	57.30	106.00	60.80	101.00	57.90	101.00	75.10	112.00	71.80	97.60	122.00	108.00
15	49.80	84.00	50.60	84.40	57.00	89.20	0.00*	0.00*	56.80	98.90	52.80	93.90
16	67.10	59.00	42.60	89.00	36.30	41.50*	37.50	46.60	52.00	109.00	61.50	88.00
17	35.90*	45.60*	40.50*	46.30*	49.60*	35.10*	103.00	141.00	58.10	60.30	106.00	152.00
18	40.80*	51.80*	28.30*	41.70*	42.90	95.60	23.10	3.57	28.00	31.30	28.50*	52.90*
19	79.60	137.00	58.50	164.00	75.70*	179.00*	0.00*	0.00*	62.20	164.00	135.00	218.00
20	105.00	122.00	76.20	128.00	132.00*	205.00*	255.00*	319.00*	126.00*	198.00	156.00	196.00

TABLE 42 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
LAB NUMBER												
1	287.00	836.00	295.00	473.00	294.00	561.00	475.00	654.00	741.00	592.00	329.00	598.00
2	291.00	377.00	153.00	312.00	288.00	314.00	232.00	346.00	246.00*	231.00*	274.00*	299.00*
3	445.00	593.00	500.00	577.00	431.00	587.00	356.00	294.00	386.00	640.00	415.00	517.00
4	429.00	520.00	438.00	532.00	442.00	542.00	412.00	497.00	395.00	471.00	387.00	500.00
5	*	*	*	*	*	*	*	*	*	*	*	*
6	306.00	429.00	416.00	435.00	404.00	441.00	453.00	520.00	422.00	453.00	378.00	445.00
7	631.00	663.00	401.00	758.00	406.00	445.00	446.00	767.00	502.00	720.00	429.00	745.00
8	532.00	583.00	427.00	584.00	433.00	592.00	502.00	492.00	443.00	581.00	492.00	493.00
9	826.00*	1060.00*	953.00*	1187.00*	742.00*	576.00*	623.00*	974.00*	805.00*	1031.00*	852.00*	1101.00*
10	540.00	587.00	552.00	613.00	561.00	580.00	548.00	501.00	511.00	595.00	592.00	629.00
11	*	*	*	*	*	*	*	*	*	*	*	*
12	378.00	591.00	477.00	834.00	557.00	663.00	523.00	625.00	491.00	851.00	658.00*	838.00*
13	342.00	594.00	335.00	541.00	333.00	590.00	319.00	536.00	299.00	541.00	262.00	500.00
14	471.00	512.00	444.00	558.00	429.00	538.00	494.00	496.00	396.00	494.00	384.00	509.00
15	336.00	414.00	332.00	420.00	357.00	430.00	176.00*	272.00*	342.00	462.00	348.00	436.00
16	147.00	155.00	151.00	151.00	156.00	350.00	300.00	302.00	286.00	294.00	259.00	287.00
17	165.00*	211.00*	182.00*	157.00*	186.00*	210.00*	369.00	450.00	405.00	448.00	701.00	488.00
18	224.00*	211.00*	177.00*	198.00*	301.00	396.00	497.00	269.00	202.00	486.00	335.00*	416.00*
19	582.00	722.00	620.00	733.00	534.00*	733.00*	304.00	464.00	602.00	793.00	538.00	699.00
20	598.00	566.00	440.00	574.00	726.00*	902.00*	780.00*	1020.00*	758.00	910.00	745.00	789.00

TABLE 43. RAW DATA FOR *CIS*-1,3-DICHLOROPROPENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	4.03	5.18	4.21	5.22	4.26	5.31	4.27	4.61	4.52	5.41	3.73	10.50
2	13.90*	17.80*	16.50*	23.10*	12.90*	16.50*	1.46	12.00	10.60*	14.40*	8.33	10.20
3	2.89	4.29	3.96	4.70	2.24	3.06	0.00*	0.00*	2.71	3.80	0.00*	0.00*
4	4.89	7.17	6.24	6.38	3.75	4.77	6.60	12.20	4.40	5.46	2.85	4.35
5	2.56	3.86	3.27	5.07	2.94	4.20	2.80	3.23	2.48	3.10	3.07	3.62
6	3.02	*	4.53	*	2.45	*	0.00*	*	3.30	*	3.77	*
7	7.59*	10.40	51.90*	69.20*	8.09	9.45	0.00*	0.00*	13.00	13.00	20.10*	10.90
8	2.40	3.20	5.34	6.68	3.87	4.94	2.09	1.56	2.94	4.81	2.00	6.54
9	2.25	6.80	0.11	14.20*	1.68	2.12	5.41	0.00*	2.20	2.78	3.86	16.00
10	3.62	5.39	0.56	4.29	2.93	4.91	4.83	6.74	1.62	2.94	4.50	8.46
11	*	*	*	*	*	*	*	*	*	*	*	*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	58.40*
13	4.62	8.34	0.00*	5.75	4.88	9.06	2.47	10.20	5.39	10.50	8.15	17.20
14	2.88	3.81	3.29	4.57	2.51	3.95	5.41	2.62	1.10	2.44	2.53	2.94
15	2.87	4.00	2.85	3.79	2.97	4.88	1.27	2.18	3.09	4.63	1.60	2.92
16	0.00*	0.00*	0.00*	0.00*	3.12	9.53	0.00*	0.00*	0.00*	0.00*	2.88*	1.70*
17	0.00*	9.70	7.40*	13.00*	10.40	15.60*	10.40*	16.90*	15.00	25.00*	14.00*	24.30*
18	3.04	2.82	1.73	3.19	2.57	3.58	0.00*	0.00*	7.14	61.20*	0.00*	0.00*
19	29.20*	14.10*	11.50*	8.42*	11.20*	12.00*	39.90*	16.80*	9.28*	14.10*	13.60*	17.00*
20	4.14	6.09	8.28	10.10*	9.30	10.10	3.60	7.06	4.60	3.78	8.20	8.10

TABLE 43 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	42.50	59.50	44.80	50.80	42.80	52.00	43.10	47.50	99.80	59.40	49.60	65.40
2	146.00*	166.00*	145.00*	181.00*	126.00*	148.00*	115.00*	118.00	103.00*	166.00*	96.80	153.00*
3	35.50	52.40	23.30	51.00	35.40	33.80	45.00	43.40	31.40	34.40	31.30	27.00
4	28.80	35.20	28.40	36.80	29.70	35.30	33.90	38.80	19.10	29.00	30.00	38.10
5	33.50	39.30	43.00	40.80	32.10	37.70	29.40	37.10	35.50	40.90	30.60	40.10
6	34.60	42.30	35.90	43.60	34.60	41.00	32.10	48.60	29.50	42.30	33.30	44.90
7	50.50	58.80	101.00*	125.00	46.60	63.10	35.00	60.50	44.60	49.40	44.50	81.80
8	33.30	40.30	37.30	43.80	33.00	39.90	53.10	38.90	38.40	43.20	39.50	47.10
9	45.10	66.00	47.00	62.30	42.40	56.80	42.90	46.90	40.50	56.60	26.30	41.90
10	44.00	57.80	42.30	60.30	43.90	63.90	50.80	59.50	43.20	55.60	46.00	66.90
11	*	*	*	*	*	*	*	*	*	*	*	*
12	123.00*	123.00	0.00*	114.00	45.40	83.70	84.80	114.00	97.30	52.20	193.00*	187.00*
13	54.00	64.90	49.30	62.90	59.80	73.90	49.10	67.60	96.30	69.00	83.60	77.30
14	33.30	42.40	34.00	38.60	32.90	42.60	34.60	38.60	39.00	39.20	40.40	41.80
15	34.00	41.90	35.30	44.10	37.20	44.10	34.20	44.00	38.30	49.00	32.90	44.00
16	46.10*	39.50*	33.80*	53.40*	8.26	7.66	0.16*	4.46*	40.30	49.90	0.00*	0.00*
17	79.00	211.00*	73.00*	204.00*	84.00	22.40	126.00*	190.00*	0.00*	52.00	135.00*	201.00*
18	53.40	62.10	39.10	46.80	30.80	50.40	28.60	59.20	35.90	38.90	31.50	44.40
19	148.00*	186.00*	105.00*	162.00*	139.00*	165.00*	162.00*	201.00*	114.00*	156.00*	142.00*	184.00*
20	72.00	109.00	43.70	96.00	70.10	88.20	72.30	46.80	67.90	73.20	74.50	76.00

TABLE 43 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
LAB NUMBER												
1	352.00	382.00	388.00	373.00	364.00	360.00	190.00	342.00	134.00	719.00*	123.00	398.00
2	627.00*	803.00*	583.00*	670.00*	520.00*	468.00*	577.00	627.00	585.00*	639.00*	530.00*	698.00*
3	181.00	236.00	200.00	240.00	165.00	227.00	347.00	147.00	148.00	264.00	181.00	238.00
4	138.00	164.00	136.00	166.00	150.00	171.00	128.00	149.00	119.00	158.00	121.00	173.00
5	152.00	175.00	147.00	171.00	150.00	174.00	142.00	180.00	161.00	174.00	156.00	207.00
6	139.00	198.00	196.00	198.00	190.00	205.00	205.00	241.00	168.00	198.00	204.00	241.00
7	179.00	262.00	452.00	349.00	216.00	239.00	272.00	255.00	191.00	241.00	206.00	276.00
8	196.00	206.00	218.00	206.00	149.00	213.00	172.00	161.00	152.00	216.00	174.00	169.00
9	267.00	346.00	295.00	373.00	154.00	196.00	149.00	215.00	156.00	204.00	160.00	202.00
10	342.00	390.00	356.00	409.00	307.00	404.00	365.00	456.00	311.00	321.00	370.00	347.00
11	*	*	*	*	*	*	*	*	*	*	*	*
12	435.00	1247.00*	567.00	804.00*	787.00*	1020.00	567.00	804.00	721.00*	1280.00*	1130.00*	1740.00*
13	253.00	377.00	233.00	378.00	243.00	423.00	232.00	394.00	227.00	360.00	236.00	364.00
14	214.00	229.00	198.00	227.00	183.00	236.00	202.00	196.00	176.00	204.00	157.00	197.00
15	165.00	203.00	167.00	201.00	173.00	206.00	178.00	214.00	176.00	211.00	172.00	197.00
16	82.00*	83.00*	80.20*	0.00*	150.00	32.40	11.60*	12.50*	13.50	11.70	7.77*	10.50*
17	840.00*	950.00*	850.00*	940.00*	880.00*	1000.00	782.00*	830.00*	884.00*	1450.00*	943.00*	932.00*
18	253.00	226.00	216.00	219.00	170.00	210.00	261.00	338.00	202.00	288.00	189.00	215.00
19	1130.00*	1410.00*	997.00*	1490.00*	1280.00*	1490.00*	1310.00*	1570.00*	1030.00*	1450.00*	1050.00*	1480.00*
20	336.00	447.00	293.00	402.00	328.00	410.00	314.00	413.00	322.00	389.00	322.00	301.00

TABLE 44. RAW DATA FOR 1,1,2,2-TETRACHLOROETHANE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.02	8.96	7.89	9.66	7.64	9.58	5.30	0.00*	7.85	7.38	8.68	9.69
2	8.37	9.74	8.43	11.10	7.99	8.27	3.14	2.48	7.40	10.60	5.52	8.18
3	10.10*	12.70*	10.30*	13.90*	10.60*	13.10*	4.07	10.40	11.10*	14.10*	10.90	16.00
4	7.37	10.20	8.51	10.40	8.48	10.50	0.00*	6.32	8.06	10.40	8.27	10.30
5	5.33	8.51	6.07	10.20	6.51	10.80	41.60	3.92	11.50	10.20	12.80	10.50
6	7.70	*	7.70	*	7.05	*	56.70	*	8.85	*	8.69	*
7	22.40	23.70*	19.60*	21.00	20.90*	21.70*	1.40	9.60	18.10*	20.60	21.20	21.20
8	0.87	3.94	4.92	9.83	3.82	9.16	47.10	19.10	4.59	10.30	14.70	4.69
9	5.35	9.50	7.12*	12.60*	6.37	8.74	18.30	20.10	3.64	4.90	5.33	19.50
10	1.65	2.35	1.16	1.39	1.95	2.37	0.00*	2.40	1.75	2.18	1.97	2.18
11	0.00*	15.40	7.11	16.10	8.94	10.40	0.00*	0.00*	12.00	16.40	15.20	16.80
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	6.46	10.70	6.46	13.40	7.10	13.50	70.30*	121.00*	5.56	14.40	7.71	16.00
14	5.74	8.39	6.69	11.50	6.82	16.00	22.50	2.20	7.72	7.82	7.40	7.90
15	6.03	6.86	3.81	5.70	3.97	6.49	0.00*	0.00*	2.84	6.02	3.80	5.91
16	10.50	11.80	0.00*	0.70*	10.90	9.15	3.99	4.40	6.33	4.06	18.00	9.94
17	0.00*	0.00*	0.00*	1.20*	0.00*	1.70*	0.00*	2.00*	3.50*	4.60*	2.77*	2.82*
18	6.80	7.47	3.95	6.31	6.78	7.38	0.00*	0.00*	9.20	44.70*	2.72	3.19
19	23.20	7.12	8.48	5.21	6.51	8.23	8.52	7.79	7.70	6.23	8.40	7.65
20	8.53	12.50	2.93	5.38	6.42	8.33	11.90	0.00*	6.41	8.28	7.60	8.20

TABLE 44 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	80.60	100.00	83.80	103.00	83.60	98.30	43.80	53.20	83.00	105.00	97.90	128.00
2	72.10	107.00	75.50	106.00	82.60	80.10	40.20	89.70	56.20	109.00	76.90	67.50
3	115.00*	164.00*	126.00*	156.00*	119.00*	132.00*	95.00	83.80	117.00*	132.00*	124.00	88.00
4	77.20	96.80	62.20	88.60	75.70	93.80	66.60	78.60	54.70	79.00	81.00	103.00
5	65.70	63.50	68.50	68.90	64.60	67.20	41.30	88.70	66.80	67.70	55.20	94.70
6	79.50	95.20	80.10	98.80	79.50	89.20	79.30	110.00	71.10	96.40	77.10	101.00
7	79.40	102.00	58.30	76.20	75.60	110.00	97.80	64.80	52.10	81.20	59.10	69.60
8	53.30	56.60	50.20	68.70	46.10	59.80	160.00	40.60	57.00	74.60	73.70	63.60
9	70.40	108.00	109.00*	146.00*	98.00	131.00	93.40	107.00	93.00	129.00	77.50	109.00
10	41.00	52.50	45.40	80.90	34.50	65.80	16.00	52.10	47.90	43.20	48.50	43.50
11	53.80	122.00	63.30	121.00	85.00	104.00	58.70	104.00	70.40	105.00	66.40	119.00
12	95.30	92.70	60.40	78.60	38.10	74.80	0.00*	0.00*	17.60	14.30	125.00	64.60
13	77.30	89.20	80.70	102.00	91.90	106.00	131.00*	187.00*	113.00	100.00	108.00	98.90
14	87.40	111.00	80.90	82.40	80.80	90.00	62.50	94.50	105.00	77.60	83.70	106.00
15	64.70	82.80	62.00	79.50	62.00	80.70	18.40	34.30	60.10	83.30	56.90	80.30
16	63.00	58.70	54.30*	78.60*	77.10	91.60	43.90	53.00	60.50	96.30	77.10	88.40
17	20.00*	25.90*	21.00*	28.40*	38.80*	28.30*	25.20*	29.90*	25.80*	34.90*	27.00*	37.10*
18	116.00	144.00	65.40	88.50	69.40	107.00	0.00*	88.20	75.30	98.30	74.70	110.00
19	87.30	108.00	57.80	80.80	81.70	95.70	83.70	107.00	74.80	93.90	84.10	115.00
20	96.20	136.00	97.70	122.00	109.00	145.00	150.00	180.00*	109.00	140.00	113.00	139.00

TABLE 44 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
LAB NUMBER												
1	388.00	538.00	430.00	515.00	414.00	508.00	181.00	418.00	496.00	719.00	536.00	745.00
2	432.00	436.00	345.00	378.00	288.00	405.00	299.00	365.00	320.00	361.00	287.00	433.00
3	522.00*	671.00*	591.00*	698.00*	510.00*	689.00*	440.00	459.00	475.00*	751.00*	556.00	695.00
4	402.00	483.00	402.00	499.00	390.00	519.00	348.00	386.00	340.00	403.00	364.00	437.00
5	350.00	358.00	312.00	326.00	339.00	341.00	401.00	506.00	331.00	336.00	339.00	572.00
6	262.00	396.00	351.00	396.00	306.00	402.00	457.00	508.00	376.00	409.00	402.00	434.00
7	425.00	533.00	515.00	598.00	451.00	513.00	656.00	554.00	295.00	469.00	407.00	430.00
8	402.00	413.00	276.00	380.00	287.00	435.00	422.00	391.00	306.00	454.00	368.00	335.00
9	499.00	597.00	638.00*	821.00*	457.00	497.00	435.00	691.00	385.00	546.00	460.00	603.00
10	371.00	417.00	382.00	423.00	436.00	477.00	387.00	404.00	294.00	494.00	428.00	459.00
11	232.00	550.00	245.00	491.00	269.00	588.00	217.00	292.00	306.00	461.00	293.00	481.00
12	0.00*	510.00	446.00	567.00	474.00	648.00	910.00	1240.00*	429.00	671.00	748.00	808.00
13	342.00	493.00	360.00	490.00	371.00	653.00	395.00*	659.00*	339.00	550.00	326.00	569.00
14	516.00	813.00	657.00	836.00*	602.00	810.00	660.00	654.00	483.00	579.00	526.00	693.00
15	320.00	408.00	317.00	398.00	317.00	387.00	271.00	345.00	306.00	412.00	301.00	352.00
16	191.00	207.00	190.00*	195.00*	173.00	212.00	108.00	124.00	183.00	200.00	136.00	158.00
17	86.30*	140.00*	115.00*	150.00*	120.00*	120.00*	124.00*	89.70*	120.00*	163.00*	144.00*	188.00*
18	509.00	473.00	356.00	460.00	337.00	463.00	511.00	632.00	362.00	524.00	401.00	480.00
19	363.00	525.00	365.00	439.00	430.00	556.00	452.00	544.00	212.00	586.00	384.00	562.00
20	480.00	588.00	500.00	623.00	564.00	703.00	615.00	736.00	568.00	705.00	568.00	688.00

TABLE 45. RAW DATA FOR 1,3-DICHLOROBENZENE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	1	2	1	2	1	2	1	2	1	2	1	2
TRUE CONC:	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
LAB NUMBER												
1	7.81	8.73	7.93	8.39	7.72	8.78	3.57	1.97	8.26	6.35	9.72	8.66
2	5.62	6.86	4.58	10.50	6.30	6.26	7.32	7.84	5.20	7.12	6.19	5.12
3	11.80	12.40	11.80	11.90	10.10	9.12	17.80	23.80*	9.09	9.16	7.47	7.00
4	8.74	9.31	9.45	9.59	9.37	9.69	8.67	10.80	9.20	9.37	9.04	8.30
5	6.82	4.47	9.80	12.20	0.00*	0.00*	0.00*	0.00*	13.30	9.52	33.50*	21.10*
6	8.48	*	8.28	*	7.41	*	16.30	*	8.51	*	6.87	*
7	14.10	12.60	12.30*	12.90*	10.80	13.10	10.60	6.50	11.80	10.90	10.50	10.80
8	5.15	4.45	5.29	11.60	5.29	6.25	5.20	4.90	3.23	2.95	5.55	7.92
9	8.41	10.10	3.85	10.60	7.01	7.14	9.76	8.40	6.63	7.61	6.89	6.25
10	2.44	3.48	0.98	3.32	2.58	3.79	3.14	3.96	2.35	4.30	2.38	3.48
11	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	5.65	9.72	6.91	8.86	6.22	10.70	0.00*	6.99	2.23	8.73	6.22	10.80
14	5.34	5.90	8.65	11.70	7.69	12.40	16.80	10.40	8.87	7.79	7.70	7.32
15	4.32	4.90	5.51	4.55	4.73	7.38	5.26	5.36	4.52	7.15	5.20	6.92
16	12.10	13.20	11.00	17.80	11.60	8.28	4.24	8.67	7.50	7.34	12.80	9.56
17	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	4.00	0.00*	0.00*
18	7.24	5.94	2.66	6.66	8.48	5.77	9.78	8.48	17.00	36.80*	4.82	4.45
19	21.80	3.00	5.00	6.00	10.30	11.60	0.00*	4.67	6.00	0.00*	14.60	1.33
20	17.00	18.20	0.00*	0.00*	11.80	9.22	6.90	8.00	4.86	5.66	2.57	7.09

TABLE 45 (continued)

MEDIUM YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	3	4	3	4	3	4	3	4	3	4	3	4
TRUE CONC:	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
LAB NUMBER												
1	91.20	111.00	90.20	107.00	91.50	108.00	108.00	81.30	90.60	104.00	93.00	110.00
2	49.70	63.80	68.00	91.10	66.60	89.40	68.50	86.90	70.80	88.20	74.70	85.50
3	150.00*	192.00	133.00*	179.00*	128.00	120.00	54.40	47.90	123.00	123.00	144.00*	33.70
4	75.70	90.30	74.00	87.70	85.50	95.90	77.50	93.10	69.70	98.10	85.60	106.00
5	61.80	84.50	63.00	87.60	147.00	185.00*	97.70	69.20	61.40	84.30	77.40	111.00
6	80.90	119.00	85.70	124.00	83.30	114.00	85.70	120.00	86.60	105.00	72.70	104.00
7	76.80	119.00	111.00*	118.00*	87.70	94.80	81.10	91.40	75.70	89.20	71.80	99.80
8	57.80	76.80	67.50	76.80	56.30	73.10	80.90	73.90	70.30	93.40	70.20	82.90
9	77.40	111.00	87.10	115.00	83.50	113.00	86.10	107.00	79.30	111.00	71.30	111.00
10	36.80	45.60	43.10	55.80	35.80	57.80	33.80	49.60	39.20	50.90	36.60	47.30
11	42.10	121.00	50.60	112.00	67.60	83.90	65.20	108.00	65.50	94.00	76.10	88.80
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	92.10	107.00	89.80	100.00	85.30	88.10	78.90	83.90	94.40	83.20	97.20	76.10
14	84.50	125.00	96.80	97.50	95.70	108.00	81.00	110.00	128.00	83.30	79.10	144.00
15	69.80	93.50	60.80	81.00	73.10	89.40	71.90	99.00	68.20	92.20	63.70	95.10
16	74.60	65.50	61.00	93.80	75.50	88.90	52.70	58.00	67.80	84.00	71.60	66.50
17	82.70	106.00	85.00	71.80	95.00	47.30	71.30	98.90	393.00*	200.00*	74.80	115.00
18	122.00	160.00	53.00	106.00	72.30	118.00	42.80	129.00	77.60	86.30	104.00	157.00
19	95.20	108.00	47.90	91.00	76.90	97.30	93.20	85.90	72.10	41.70	58.50	81.80
20	83.30	114.00	67.90	94.70	90.60	117.00	94.00	112.00	82.50	99.00	89.80	107.00

TABLE 45 (continued)

HIGH YOUDEN PAIR, UNITS - UG/L

	DISTILLED WATER		TAP WATER		SURFACE WATER		WASTE WATER 1		WASTE WATER 2		WASTE WATER 3	
AMPUL NO:	5	6	5	6	5	6	5	6	5	6	5	6
TRUE CONC:	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
LAB NUMBER												
1	419.00	571.00	422.00	521.00	432.00	532.00	541.00	621.00	456.00	559.00	428.00	520.00
2	447.00	555.00	365.00	435.00	341.00	423.00	350.00	411.00	352.00	413.00	308.00	429.00
3	261.00	322.00	287.00	336.00	233.00	323.00	216.00	220.00	208.00	376.00	243.00	326.00
4	397.00	491.00	411.00	510.00	426.00	525.00	389.00	466.00	375.00	437.00	380.00	482.00
5	416.00	524.00	351.00	528.00	595.00	635.00	342.00	567.00	369.00	599.00	455.00	538.00
6	191.00	314.00	210.00	372.00	210.00	390.00	284.00	780.00	216.00	510.00	202.00	540.00
7	354.00	507.00	451.00*	578.00*	450.00	500.00	485.00	428.00	320.00	456.00	419.00	460.00
8	395.00	429.00	302.00	418.00	315.00	431.00	343.00	345.00	333.00	462.00	351.00	424.00
9	807.00*	975.00*	707.00	998.00*	412.00	453.00	377.00	561.00	398.00	536.00	392.00	515.00
10	355.00	395.00	368.00	412.00	445.00	441.00	350.00	442.00	315.00	396.00	381.00	412.00
11	198.00	480.00	182.00	380.00	270.00	529.00	197.00	307.00	331.00	458.00	258.00	425.00
12	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
13	379.00	522.00	99.40	523.00	380.00	537.00	338.00	517.00	306.00	592.00	341.00	521.00
14	564.00	650.00	505.00	654.00	488.00	602.00	572.00	555.00	338.00	432.00	398.00	551.00
15	308.00	379.00	301.00	359.00	319.00	390.00	326.00	404.00	297.00	387.00	316.00	340.00
16	260.00	303.00	257.00	379.00	383.00	381.00	212.00	239.00	320.00	376.00	155.00	231.00
17	430.00	230.00	440.00	560.00	470.00	260.00	405.00	517.00	1820.00*	2340.00*	885.00*	586.00
18	525.00	475.00	315.00	465.00	347.00	459.00	614.00	794.00	349.00	569.00	449.00	587.00
19	431.00	589.00	475.00	515.00	497.00	591.00	525.00	626.00	431.00	628.00	*	616.00
20	390.00	458.00	365.00	481.00	435.00	524.00	429.00	616.00	421.00	506.00	414.00	541.00

TABLE 46. LEGEND FOR TABLES 47 THROUGH 49

	Analytes	
Mix #1	TCFM	= Trichlorofluoromethane
	CM	= Chloromethane
	VC	= Vinyl chloride
	t-1,2-DCE	= trans-1,2-Dichloroethene
	1,1,1-TCE	= 1,1,1-Trichloroethane
	TCE	= Trichloroethene
	DBCM	= Dibromochloromethane
	2-CEVE	= 2-Chloroethylvinyl ether
	TCE[2]	= Tetrachloroethene
	1,2-DCB	= 1,2-Dichlorobenzene
Mix #2	BM	= Bromomethane
	CE	= Chloroethane
	1,1-DCE	= 1,1-Dichloroethene
	C	= Chloroform
	CT	= Carbon tetrachloride
	t-1,3-DCP	= trans-1,3-Dichloropropene
	1,1,2-TCE	= 1,1,2-Trichloroethane
	BF	= Bromoform
	CB	= Chlorobenzene
	1,4-DCB	= 1,4-Dichlorobenzene
Mix #3	DCDFM	= Dichlorodifluoromethane
	MC	= Methylene chloride
	1,1-DCE	= 1,1-Dichloroethane
	1,2-DCE	= 1,2-Dichloroethane
	BDCM	= Bromodichloromethane
	1,2-DCP	= 1,2-Dichloropropane
	c-1,3-dcp	= cis-1,3-Dichloropropene
	1,1,2,2-TCE	= 1,1,2,2-Tetrachloroethane
	1,3-DCB	= 1,3-Dichlorobenzene

[a]ND - not detected.

[b]NA - not analyzed.

[c]O.S. - off scale.

TABLE 47. BLANK VALUES (µg/L) - MIX #1

Laboratory number	Distilled water									
	TCFM	CM	VC	t-1,2-DCE	1,1,1-TCE	TCE	DBCM	2-CEVE	TCE[2]	1,2-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	1.62	ND	ND	ND	ND	0.16	ND	ND	ND	ND
3	<0.50	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<1.00	<0.05	<0.10
4	0.80	0	0.41	0	0.12	0.07	1.05	0	0	0
5	NA[b]	0	0	0	NA	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	3.02	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0.04	0	0	0.05	0.32	0.12	0.47	0	0.11	0
14	ND	ND	ND	ND	2.24	ND	ND	ND	ND	ND
15	0.02	0	0	0	0	0	0	0	0.07	0
16	0	0	0.05	0	0	0	0	0	0	1.19
17	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND
18	0	0.16	0	0.20	0	0	0	0	0	0
19	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.08	<0.01	ND
20	<0.05	<0.13	<0.08	<0.08	<0.10	<0.14	<0.17	<0.20	<0.09	<0.26

(continued)

TABLE 47 (continued)

Laboratory number	Surface water									
	TCFM	CM	VC	t-1,2-DCE	1,1,1-TCE	TCE	DBCM	2-CEVE	TCE[2]	1,2-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	1.62	ND	ND	ND	ND	0.22	ND	ND	ND	ND
3	<0.50	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.05	<0.06	<0.10
4	0	0	0.34	0	0	0	0	0	0	0
5	NA	0	0	0	0.39	NA	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	2.57	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0.06	0	0	0.05	0.21	0.21	0.28	0	0.15	0
14	ND	ND	ND	ND	2.11	ND	ND	ND	ND	ND
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	1.54	0	0	2.19	0	0.88	1.41
17	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND
18	0	0	0	0	0	0	0	0	0	0
19	0.02	<0.02	<0.02	<0.02	<0.02	1.08	<0.01	<0.08	<0.01	ND
20	<0.06	<0.21	<0.13	<0.11	<0.10	<0.21	<0.14	<0.21	<0.13	<0.41

(continued)

TABLE 47 (continued)

Laboratory number	Wastewater #1									
	TCFM	CM	VC	t-1,2-DCE	1,1,1-TCE	TCE	DBCM	2-CEVE	TCE[2]	1,2-DCB
1	ND	ND	ND	5.76	8.27	ND	ND	ND	ND	ND
2	1.67	ND	ND	1.24	0.81	7.47	3.68	1.59	47.3	5.50
3	1.60	<0.15	1.71	<0.06	2.29	2.85	<0.05	<0.40	71.1	1.46
4	0.08	0.15	0.59	0.20	1.24	3.68	4.27	0	58.0	10.2
5	NA	0	0	0	28.5	NA	2.68	0	274	8.03
6	0	ND	ND	0	2.81	3.86	4.27	0	41.8	4.18
7	ND	ND	ND	ND	3.77	8.02	8.35	ND	55.7	23.2
8	0	0	0	0	0	4.97	0.43	0	21.7	0
9	0.61	0	0	0	12.0	11.3	13.3	0	56.5	7.54
10	0	0	0	0	3.40	11.1	5.40	7.20	0	10.2
11	0	0	0	0	2.84	3.52	5.46	0	66.4	0
12	ND	ND	ND	ND	4.36	29.1	ND	ND	224	ND
13	0	0.47	0.05	0.40	10.9	8.68	11.6	0	68.6	0
14	ND	ND	ND	ND	4.81	4.63	3.06	ND	58.7	9.88
15	0.07	0	0	0	4.84	6.27	5.24	0	46.5	5.16
16	0.78	0	1.45	0.12	2.23	5.22	4.42	0	51.5	6.69
17	ND	ND	NA	ND	9.30	4.23	5.30	ND	73.6	ND
18	0.28	0.82	0.04	4.58	1029	0.74	3.61	25.7	364	22.6
19	0	0.72	0	0.56	6.35	14.5	8.95	0	90.5	NA
20	<0.10	<0.81	<0.12	<0.14	10.7	14.7	11.8	<0.24	54.1	<0.44

(continued)

TABLE 47 (continued)

Laboratory number	Wastewater #2									
	TCFM	CM	VC	t-1,2-DCE	1,1,1-TCE	TCE	DBCM	2-CEVE	TCE[2]	1,2-DCB
1	ND	ND	ND	ND	4.95	1.37	ND	ND	ND	ND
2	1.51	ND	ND	1.02	2.52	1.23	2.66	ND	0.02	ND
3	<0.50	<0.10	<0.50	1.27	1.26	1.58	<3.87	<1.00	10.6	<0.10
4	0	0	0.69	0.12	2.06	1.22	2.80	0	0.69	0.09
5	NA	2.90	0	0	3.17	NA	0	0	0	0
6	0	ND	ND	0	0	0	0	0	0	0
7	ND	ND	ND	ND	3.72	4.26	ND	ND	ND	ND
8	0	0	0	0	2.02	1.05	0	0	3.80	1.97
9	0	0	0	0.74	1.82	0.58	0	0	0	0
10	0	0	0	0	1.27	1.58	0	0	0	0.10
11	0	0	0	0	2.72	0.98	2.43	0	2.60	0
12	ND	ND	ND	0.67	2.61	4.41	ND	ND	7.61	ND
13	0.17	0	0	0.30	3.75	2.05	0.70	0	0.73	0
14	ND	ND	0.97	1.01	5.00	1.78	ND	ND	1.27	ND
15	0	0	0	0	1.59	0.70	0	0	0.07	0
16	1.61	0	1.51	1.31	4.89	3.01	0	0	0.46	0
17	ND	ND	NA	ND	2.70	2.50	ND	ND	ND	ND
18	0	0	0	0	0	1.46	0.25	0	0	0
19	0	0	0	0	5.02	3.21	0	0	0	NA
20	<0.07	<0.48	<0.12	<0.14	4.12	0.53	<0.14	<0.24	0.27	<0.44

(continued)

TABLE 47 (continued)

Laboratory number	Wastewater #3									
	TCFM	CM	VC	t-1,2-DCE	1,1,1-TCE	TCE	DBCM	2-CEVE	TCE[2]	1,2-DCB
1	ND	24.4	ND	27.1	18.2	ND	ND	ND	ND	ND
2	1.70	9.85	ND	1.01	6.91	1.43	3.11	ND	ND	ND
3	<0.50	<0.50	<1.00	<0.50	0.69	15.8	<0.50	<0.50	<0.50	<0.50
4	0.18	22.7	0.62	0.21	3.59	2.37	4.19	0	0.71	0.16
5	NA	0	0	0	13.4	NA	3.04	0	0	0
6	0	ND	ND	0	5.43	0	0	0	0	0
7	ND	19.8	ND	ND	9.11	4.45	6.75	ND	ND	ND
8	0	5.16	0	0	4.95	2.49	3.67	0	2.27	0
9	2.49	15.8	4.26	0	4.83	3.48	5.97	0	2.02	0
	(2.49)*	(15.8)	(4.26)	(0)	(33.8)	(7.80)	(18.0)	(0)	(2.02)	(0)
10	0	0	0	0	0	0	0.35	2.61	0.29	0.08
11	0	6.17	0	0	2.45	1.28	1.97	0	2.66	0
12	ND	ND	ND	ND	4.16	6.48	ND	ND	ND	ND
13	0.04	12.8	0	0.30	10.1	0.79	9.35	0	0.51	0.97
14	ND	31.8	ND	ND	5.40	2.54	3.88	ND	0.70	ND
15	0	14.9	0	0	6.75	1.82	5.88	0	0.37	0
16	4.87	0	17.0	0	2.10	1.29	2.00	0	2.16	3.24
17	ND	ND	NA	ND	6.40	1.70	3.30	ND	2.90	ND
18	0	21.7	25.6	NA	6.42	1.80	0	0	0.34	0
19	0.11	19.1	0	0.34	6.18	4.43	3.92	0	0	NA
20	<0.07	11.9	0.02	<0.07	<0.09	<0.11	2.31	<0.20	2.11	<0.17

*First set of values for ampuls 1-2; ( ) set of values for ampuls 3-6.

TABLE 48. BLANK VALUES (µg/L) - MIX #2

Laboratory number	Distilled water									
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	<0.14	<0.17	<0.09	<0.04	<0.05	<0.08	<0.05	<0.16	<0.11	<0.09
4	0	0	0	5.57	0	0	0.41	0	0	0
5	0	0	0	0	0	0	0	C	0	0
6	0	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	6.06	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0	0.10	0.05	0.73	0.08	0.12	0.02	0	0.30	0.63
14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	0	0	0	0	0	0	0	0	0	0
16	0.20	0	0	0	0	0.10	0	0	0.76	0
17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	0	0	0	0	0	0	0	0	0
19	0	0	0.66	0	0	0	0.55	0	0	0
20	<0.14	<0.07	<0.37	<0.05	<0.06	<0.11	<0.08	<0.19	<0.59	<0.26

(continued)

TABLE 48 (continued)

Laboratory number	Tap water									
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	25.3	ND	ND	ND	ND	ND	ND
3	<0.49	<0.07	<0.10	64.8	<0.05	<0.08	<0.05	<0.16	<0.11	<0.09
4	0	0	0	19.3	0	0	0.78	0	0	0
5	0	0	0	35.7	0	0	0	0	0	0
6	0	0	0	27.7	0	0	0	0	0	0
7	ND	ND	ND	46.6	ND	ND	ND	35.1	ND	ND
8	0	0	0	16.9	0	0	0	0	0	0
9	0	0	0	109	0	0	7.24	0	0	0
10	0	0	0	50.6	10.8	0	0	0	0	0
11	0	0	0	27.5	0	0	0	3.20	5.77	0
12	ND	ND	ND	20.8	ND	ND	ND	ND	ND	ND
13	0	0	0.02	51.5	0.32	0	2.20	0	0.30	0.63
14	ND	ND	ND	17.7	ND	ND	1.52	ND	ND	ND
15	2.68	0	0	20.9	0.19	1.52	0.10	0	0	0.28
16	0.30	0	0.76	16.4	0	0.51	1.71	0.23	0.21	0
17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	0	0	22.8	0	0	0	0	0	0
19	0	0	0	7.25	0	0	0	0	0	0
20	<0.18	<0.11	<0.34	19.9	<0.06	<0.11	1.92	<0.19	<0.63	<0.30

(continued)

TABLE 48 (continued)

Laboratory number	Surface water										
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	<0.14	<0.07	<0.09	<0.04	<0.05	<0.08	<0.05	<0.16	<0.11	<0.09
4	0	0	0	0.06	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	0	0	77.4	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	4.45	0
11	0	0	0	0	0	0	0	0	0	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0	2.81	0.04	0.22	0.32	0	0.07	0	0.18	0
14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	0	0	0	0.16	0.01	0	0	0	0	0
16	0.14	0.84	1.56	0.04	0.16	0.81	0.03	0.05	0.18	0.25
17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	0	0	-0.34	0.23	0	0	0	0	0
19	0	0	0	0	0	0	0.52	0	0	0
20	<0.18	<0.10	<0.34	<0.05	<0.06	<0.11	<0.08	<0.19	<0.63	<0.30

(continued)

TABLE 48 (continued)

Laboratory number	Wastewater #1									
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND	ND	ND	ND	ND	19.0	ND	ND	ND	ND
2	ND	1.28	3.24	4.11	1.92	1.14	2.53	383	1861	3.18
3	<0.91	<0.27	<0.34	2.35	1.58	227	<0.19	<0.60	1120	3.38
4	0	0	0.87	3.31	0	0	1.79	1.21	1460	0
5	0	0	36.4	4.66	29.7	227	2.01	0	1653	0
6	0	0	1.45	6.35	0	269	2.87	0	679	0
7	ND	ND	ND	4.92	ND	10.1	2.71	2.26	1160	ND
8	0	0	1.55	2.95	0	163	0.64	6.78	962	10.7
9	0	0	3.02	6.17	5.57	365	4.32	4.93	1681	0
10	0	0	0.96	0	0	0	3.45	3.63	369	0
11	0	0	0	5.98	0	0	5.32	0	1530	0
12	ND	ND	ND	4.23	1.59	ND	21.8	ND	12009	ND
13	0	0.40	0.50	11.6	3.19	2.02	3.52	10.8	1270	0.63
14	ND	ND	1.12	4.18	ND	ND	1.62	2.01	1580	ND
15	0	0	0.09	2.72	4.93	0	2.73	3.86	1190	7.16
16	0.34	0.15	0.31	2.76	1.89	240	0.64	0.82	572	0.42
17	ND	ND	3.80	4.30	5.50	ND	2.70	5.20	410	ND
18	0	0	0	1.25	8.49	320	0	0	1648	0
19	0	0	0	5.19	0	0	3.26	0	1480	0
20	<0.20	<0.09	1.14	4.04	2.15	209	13.0	5.12	2000	<0.34

(continued)

TABLE 48 (continued)

Laboratory number	Wastewater #2									
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND	ND	ND	1.66	ND	ND	ND	ND	1.44	ND
2	ND	ND	ND	0.24	ND	ND	0.42	1.92	2.24	ND
3	<0.18	<0.09	<0.11	<0.05	1.61	<0.10	1.99	1.84	<0.14	<0.11
4	0	0	0	0.71	1.08	0	1.69	1.86	1.80	0
5	0	0	0	1.38	2.29	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	0.75	ND	ND	1.09	0.61	1.00	ND
8	0	0	0	1.12	0	0	0	0	1.53	2.14
9	0	0	0	0	0	0	0	0	5.06	0
10	0	0.80	3.48	1.36	1.32	0.59	0	0	0	0
11	0	0	1.84	2.63	0	0	0	0	29.8	0
12	ND	ND	ND	0.70	1.81	ND	ND	ND	ND	ND
13	0	0.10	0.20	1.24	1.12	0.81	0.11	0	16.4	0.63
14	ND	ND	ND	1.06	ND	ND	ND	ND	3.16	ND
15	0	0	0	0.79	3.40	0	1.39	0	1.40	0.42
16	0.40	0.41	0.11	0.08	0.50	0.11	0.56	0.64	1.87	0.09
17	ND	ND	ND	ND	1.40	ND	ND	ND	ND	ND
18	0	0	0	0	0.32	0	0	0	1.82	0
19	0	0	0	0	0	0	0	0	0	0
20	<0.20	<0.09	3.99	<0.44	1.41	<0.80	<0.08	<0.18	<0.12	<0.36

(continued)

TABLE 48 (continued)

Laboratory number	Wastewater #3									
	BM	CE	1,1-DCE	C	CT	t-1,3-DCP	1,1,2-TCE	BF	CB	1,4-DCB
1	ND	ND	2.51	ND	ND	9.12	ND	ND	33.6	ND
2	ND	ND	2.18	26.8	0.42	10.2	1.66	3.33	39.9	0.48
3	9.13	<0.45	5.56	32.1	<0.46	44.1	<0.32	3.67	36.9	<0.28
4	0	0	2.66	21.9	0	0	2.31	2.07	36.3	0.14
5	0	0	13.0	27.0	14.3	32.6	3.50	2.62	240	9.56
6	0	0	0	25.9	0	29.3	0	0	24.9	0
7	ND	ND	3.35	17.3	ND	41.7	2.85	1.79	53.5	0.27
8	8.81	0	3.55	22.4	0.36	51.2	4.94	11.8	39.4	8.77
9	0	0	2.61	4.53	0	17.0	4.17	1.70	19.1	2.35
	(0)*	(0)	(3.85)	(19.1)	(0)	(88.8)	(9.81)	(8.10)	(38.2)	(0)
10	25.2	0	0	43.2	33.2	34.5	0	0	36.9	0
11	0	0	2.59	23.5	0	43.5	0	0	56.6	0
12	ND	ND	2.27	25.6	1.68	ND	ND	ND	ND	ND
13	0	0	3.98	42.9	4.78	113	3.30	6.76	61.9	1.25
14	ND	ND	2.37	20.4	ND	19.0	1.62	1.89	33.9	1.02
15	0	0.16	2.13	22.1	7.29	26.1	3.09	5.13	28.4	0
16	1.28	2.39	2.47	24.2	13.9	19.9	1.76	0.37	28.1	0.16
17	ND	ND	ND	20.7	3.40	ND	1.30	2.20	25.0	ND
18	0	0	28.9	21.3	10.5	29.3	0.63	4.32	0	0
19	0	0	0	26.8	0	28.4	0	12.2	25.8	0
20	<0.61	<0.27	2.06	1.85	2.75	46.2	6.86	4.68	26.9	<0.75

*First set of values for ampuls 1-2; ( ) set of values for ampuls 3-6.

TABLE 49. BLANK VALUES (µg/L) - MIX #3

Laboratory number	Distilled water								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND[a]	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	<0.11	7.54	<0.23	<0.22	<0.27	<0.12	<1.00	<0.22	<0.47
4	0	0.65	0	0	4.10	0	0.65	0	0
5	0	0	0	0	0	NA[b]	0	0	0
6	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	3.43	0	0	0	0	0	3.16	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	1.81	0	0	0	NA	0	0	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0	1.98	0.28	0.15	0	0.11	0	0.68	0.40
14	ND	4.37	ND	ND	ND	ND	ND	ND	ND
15	0	4.76	0	0	0	0	0	0	0.11
16	1.71	2.66	0	0.44	0	0	0	0	0
17	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	2.16	0	0	0	0	0	0	0
19	0	63.8	0	0	0.39	0	0	0	0
20	<0.33	19.1	<0.11	<0.11	<0.16	<0.08	<0.17	<0.18	<0.62

(continued)

TABLE 49 (continued)

Laboratory number	Tap water								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	5.99	ND	ND	ND	ND
3	<0.07	<0.09	<0.13	<0.14	7.65	<0.07	<0.13	<0.14	<1.17
4	0	0.01	0	0	13.7	0.10	1.64	0	0
5	0	0	0	0	21.1	NA	3.29	0	0
6	0	0	0	0	8.60	0	0	0	0
7	ND	ND	ND	ND	66.8	ND	ND	ND	ND
8	0	3.43	0	0	10.5	0	0	0	0
9	0	0	0	0	34.8	0	7.24	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	25.1	NA	0	0	0
12	ND	ND	ND	ND	8.33	ND	ND	ND	ND
13	0	11.1	0	1.23	12.2	0.11	12.6	0.57	0
14	ND	5.0	ND	ND	9.06	ND	1.36	ND	ND
15	0	0.81	0	0	3.20	1.34	0.14	0.02	0.18
16	8.14	1.95	0	3.13	16.6	1.98	3.63	11.3	0
17	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	1.45	0	13.3	1.43	0.58	0	0.47	1.96
19	0	0	0	0	0	0	0	0	0
20	4.32	<0.05	<0.01	<0.01	4.89	<0.08	0.40	<0.03	<0.18

(continued)

TABLE 49 (continued)

Laboratory number	Surface water								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	2.08	ND	ND	ND	ND	ND	ND	ND
3	<0.06	2.97	<0.13	<0.13	<0.16	<0.07	<0.12	<0.13	<0.28
4	0	0.04	0	0.19	0.14	0	0	0	0
5	0	122	0	0	0	NA	0	0	0
6	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	ND	ND	ND	ND
8	0	0	0	0	12.0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	8.34	0	0	0	0
11	0	0.96	0	0	0	NA	0	0	0
12	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	0.42	3.50	0	0	0	0	0	0	0
14	ND	5.00	ND	ND	ND	ND	ND	ND	ND
15	0	3.45	0	0.26	0.07	0.02	0	0.01	0.13
16	0	8.58	0	0	0	0	0	0.40	0
17	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	400 (0)*	0	1.30	0	0	0	0	0
19	0	84.5	0	0	0	0	0	0	0
20	<0.33	<0.19	<0.09	<0.09	<0.14	<0.06	<0.20	<0.14	<0.62

(continued)

TABLE 49 (continued)

Laboratory number	Wastewater #1								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND	ND	ND	ND	ND	ND	19.0	ND	ND
2	ND	ND	ND	54.1	3.98	26.4	25.3	52.7	4.58
3	<0.27	<0.37	<0.54	179	<0.66	152	5.53	79.2	<1.10
4	0	4.35	0.27	153	0.79	0	3.14	99.4	9.88
5	0	0	0	158	1.05	NA	1.25	66.4	18.0
6	0	0	0	115	0	0	0	60.3	0
7	ND	ND	ND	121	10.5	ND	15.2	68.2	11.6
8	0	3.01	0	80.1	1.47	0	0.71	42.3	10.6
9	0	0.72	0	157	7.45	236	16.5	89.7	8.89
10	0	0	0	88.7	0.12	0	0	53.3	0
11	0	1.02	0	196	2.55	NA	209	0	0
12	ND	ND	ND	312	4.98	ND	ND	886	ND
13	0	1.00	0	99.5	8.39	5.59	6.98	21.1	10.0
14	ND	5.10	ND	168	2.19	ND	5.99	96.5	8.48
15	0	0.78	0.21	185	2.48	201	3.90	63.9	7.04
16	5.71	1.43	0	93.9	5.56	0	5.53	50.9	5.33
17	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	0	0.68	0	114 (220)*	0	0	2.18	45.4 (56.8)	0
19	0	0	0	132	0	379	13.3	0	0
20	47.8	<0.30	<0.14	166	3.90	167	13.8	39.7	7.11

(continued)

TABLE 49 (continued)

Laboratory number	Wastewater #2								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND	ND	1.38	ND	ND	ND	ND	ND	ND
2	ND	ND	0.21	ND	3.27	ND	9.25	ND	ND
3	<0.18	0.76	<0.36	<0.37	2.52	<0.19	2.35	<0.36	<0.78
4	0	7.87	0.22	0.03	2.96	0	4.31	0.68	0
5	0	0	0.79	1.26	0	NA	0	0	0
6	0	0	0	0	0	0	0	0	0
7	ND	ND	ND	ND	ND	4.35	ND	ND	ND
8	0	0	0	0	0	0	0	0	3.16
9	0	1.06	1.59	0	0	1.22	0	3.75	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	2.08	2.02	NA	0	0	0
12	ND	ND	ND	ND	5.68	ND	ND	29.6	ND
13	0.16	3.50	2.63	0.26	0	0.20	0	2.34	3.30
14	ND	3.60	1.84	1.72	2.24	ND	1.72	0.88	ND
15	0	0.76	0	0.30	1.90	0	2.40	0.07	0
16	0	0.14	1.58	1.85	0	0	4.62	0	0.75
17	ND	ND	ND	137	ND	137	246	ND	ND
18	0	1.97	1.88	1.22	11.1	0	0	0	0
19	0	4.07	0.96	0	0	0.29	0	0	0
20	191	<0.21	0.76	<0.09	<0.12	<0.06	<0.19	0.20	<0.57

(continued)

TABLE 49 (continued)

Laboratory number	Wastewater #3								
	DCDFM	MC	1,1-DCE	1,2-DCE	BDCM	1,2-DCP	c-1,3-DCP	1,1,2,2-TCE	1,3-DCB
1	ND	ND	ND	ND	ND	ND	9.12	3.65	ND
2	ND	ND	0.44	656	3.04	9.56	11.7	1.33	ND
3	<0.14	0.98	<0.28	708	2.41	21.1	4.61	<0.30	<0.60
4	0	4.70	0.39	772	0.75	28.1	5.25	1.07	0.14
5	0	0	0.21	838	1.20	NA	2.18	6.67	0
6	0	0	0	108	0	87.0	0	0	0
7	ND	ND	ND	716	12.6	29.1	ND	ND	ND
8	7.16	0	0	318	0.32	12.6	0	4.26	0
9	12.1	0	0	884	9.73	32.5	3.78	4.56	0
10	0	0	0	174	0	19.1	0	0	0
11	0	0	0	912	1.46	NA	30.3	0	0
12	ND	0.43	ND	1220	5.29	ND	ND	ND	ND
13	0	2.63	0.66	690	12.3	30.9	1.56	1.12	0.52
14	ND	2.90	ND	828	1.52	22.1	2.78	2.80	ND
15	0	16.7	0.13	947	3.33	18.1	4.37	0.20	0
16	1.22	4.82	0.51	151	0.85	19.0	1.81	1.86	0
17	ND	ND	ND	141	ND	ND	27.3	1.60	0
18	0	0	0.10	0.5[c]	0	0	0	1.19	0
19	0	25.5	0	460	0	12.6	7.19	0	0
20	<0.29	0.30	0.63	923	12.5	26.6	8.92	2.65	<0.57

*First value for ampuls 1-4; ( ) values for ampuls 5, 6.

APPENDIX D

STATISTICAL SUMMARIES FOR PURGEABLE HALOCARBONS BY WATER TYPE

TABLE 50. STATISTICAL SUMMARY FOR TRICHLOROFLUOROMETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	17	18	17	18	17	17	18	18	17	16	17	16
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.78	9.27	5.85	8.28	6.28	8.93	6.66	8.94	6.10	8.34	6.41	7.59
ACCURACY(%REL ERROR)	-15.31	-7.32	-26.92	-17.17	-21.55	-10.65	-16.74	-10.59	-23.71	-16.61	-19.87	-24.11
OVERALL STD DEV (S)	2.90	3.30	2.59	2.82	1.82	2.07	2.59	2.63	2.19	2.39	2.80	2.82
OVERALL REL STD DEV, %	42.87	35.64	44.37	34.02	28.99	23.21	38.95	29.46	35.83	28.65	43.68	37.15
SINGLE STD DEV, (SR)	1.92		1.48		0.76		1.84		1.73		2.27	
ANALYST REL DEV, %	23.92		20.96		9.97		23.65		24.00		32.46	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	18	18	17	18	18	18	18	18	16	16	18	18
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	37.01	43.66	34.75	47.95	36.89	47.94	36.93	50.41	36.16	41.63	36.33	50.14
ACCURACY(%REL ERROR)	-7.49	-12.69	-13.11	-4.10	-7.78	-4.12	-7.68	0.82	-9.61	-16.74	-9.18	0.28
OVERALL STD DEV (S)	7.83	7.12	12.17	10.75	6.13	9.28	9.39	11.51	9.49	9.84	10.15	10.87
OVERALL REL STD DEV, %	21.15	16.32	35.00	22.41	16.62	19.37	25.42	22.84	26.25	23.64	27.93	21.67
SINGLE STD DEV, (SR)	4.74		10.21		5.06		9.65		4.60		8.20	
ANALYST REL DEV, %	11.75		24.68		11.93		22.10		11.84		18.96	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	18	18	18	18	18	19	18	16	17	18	18
TRUE CONC (C) UG/L	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
MEAN RECOVERY (X)	355.50	436.22	342.00	459.00	370.67	483.44	358.42	487.17	376.56	470.53	375.28	473.67
ACCURACY(%REL ERROR)	-11.12	-12.58	-14.50	-8.02	-7.33	-3.12	-10.39	-2.37	-5.86	-5.71	-6.18	-5.08
OVERALL STD DEV (S)	113.17	164.49	111.46	160.59	104.12	169.92	131.65	190.74	107.22	170.39	122.07	172.08
OVERALL REL STD DEV, %	31.83	37.71	32.59	34.99	28.09	35.15	36.73	39.15	28.47	36.21	32.53	36.33
SINGLE STD DEV, (SR)	73.64		77.60		72.39		67.62		72.04		70.92	
ANALYST REL DEV, %	18.60		19.38		16.95		15.99		17.01		16.71	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 51. STATISTICAL SUMMARY FOR CHLOROMETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	15	16	15	16	15	16	16	16	16	15	12	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.31	7.84	6.63	7.34	5.37	8.51	7.27	7.47	6.24	7.99	10.30	16.73
ACCURACY(%REL ERROR)	-21.15	-21.58	-17.18	-26.63	-32.92	-14.85	-9.17	-25.34	-21.98	-20.11	28.76	67.31
OVERALL STD DEV (S)	4.79	4.77	4.58	5.07	3.27	5.15	5.27	4.12	5.51	4.22	6.81	17.21
OVERALL REL STD DEV, %	75.87	60.89	69.11	69.15	60.88	60.45	72.59	55.13	88.32	52.82	66.10	102.85
SINGLE STD DEV, (SR)	1.59		2.12		2.86		3.85		4.16		7.72	
ANALYST REL DEV, %	22.44		30.39		41.21		52.22		58.43		57.11	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	18	18	18	17	18	18	18	17	18	14	15
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	32.12	38.44	39.89	44.95	38.06	51.97	39.72	44.72	35.98	39.42	25.11	37.94
ACCURACY(%REL ERROR)	-19.71	-23.11	-0.27	-10.10	-4.84	3.93	-0.71	-10.57	-10.04	-21.17	-37.22	-24.13
OVERALL STD DEV (S)	20.02	26.92	25.09	27.94	26.19	36.59	31.69	29.39	25.96	26.72	17.05	18.76
OVERALL REL STD DEV, %	62.33	70.02	62.90	62.16	68.81	70.41	79.78	65.72	72.13	67.80	67.90	49.44
SINGLE STD DEV, (SR)	11.49		15.20		13.98		13.94		6.81		10.07	
ANALYST REL DEV, %	32.56		35.83		31.05		33.02		18.07		31.96	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	17	17	17	17	18	16	17	18	17	17	15	15
TRUE CONC (C) UG/L	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00
MEAN RECOVERY (X)	295.71	386.86	327.28	457.06	405.11	435.06	355.35	485.94	292.41	419.24	301.33	418.87
ACCURACY(%REL ERROR)	-25.89	-22.47	-17.98	-8.41	1.53	-12.81	-10.94	-2.62	-26.71	-15.98	-24.48	-16.06
OVERALL STD DEV (S)	132.75	170.09	137.03	180.20	209.31	154.07	105.36	168.52	169.20	204.50	102.98	114.47
OVERALL REL STD DEV, %	44.89	43.97	41.87	39.43	51.67	35.41	29.65	34.68	57.86	48.78	34.18	27.33
SINGLE STD DEV, (SR)	79.52		83.81		84.25		77.32		59.25		79.54	
ANALYST REL DEV, %	23.30		21.37		20.06		18.38		16.65		22.09	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 52. STATISTICAL SUMMARY FOR VINYL CHLORIDE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	16	16	17	17	17	16	16	17	17	16	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.33	9.70	6.61	8.62	7.23	10.23	6.48	8.67	6.35	8.71	7.46	11.39
ACCURACY(%REL ERROR)	-8.38	-2.97	-17.41	-13.83	-9.57	2.34	-19.02	-13.28	-20.68	-12.95	-6.75	13.87
OVERALL STD DEV (S)	2.35	3.26	2.23	2.82	2.14	3.21	2.46	3.21	2.06	3.73	2.55	5.13
OVERALL REL STD DEV, %	32.10	33.63	33.75	32.77	29.52	31.39	38.03	36.97	32.46	42.87	34.13	45.04
SINGLE STD DEV, (SR)	1.78		0.96		1.55		1.90		2.88		2.91	
ANALYST REL DEV, %	20.93		12.55		17.70		25.14		38.22		30.90	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	16	17	17	17	17	15	16	17	17	16	16
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	36.50	44.98	41.32	50.89	40.81	48.86	42.09	53.59	36.68	46.14	44.42	56.95
ACCURACY(%REL ERROR)	-8.75	-10.04	3.29	1.78	2.03	-2.27	5.23	7.19	-8.29	-7.72	11.05	13.90
OVERALL STD DEV (S)	6.28	12.76	11.53	14.22	9.31	14.53	6.17	9.60	10.32	12.16	7.27	5.26
OVERALL REL STD DEV, %	17.21	28.36	27.91	27.95	22.82	29.73	14.66	17.91	28.13	26.35	16.38	9.24
SINGLE STD DEV, (SR)	6.09		3.62		8.63		5.77		4.17		4.19	
ANALYST REL DEV, %	14.94		7.84		19.25		12.07		10.06		8.27	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	15	16	16	16	17	17	16	16	17	17	16	16
TRUE CONC (C) UG/L	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00	401.00	500.00
MEAN RECOVERY (X)	401.60	513.38	410.63	531.25	477.18	592.47	458.38	565.13	464.29	577.35	446.88	569.75
ACCURACY(%REL ERROR)	0.15	2.67	2.40	6.25	19.00	18.49	14.31	13.02	15.78	15.47	11.44	13.95
OVERALL STD DEV (S)	90.08	198.56	146.20	185.38	166.11	235.91	118.53	174.23	185.23	272.01	128.06	162.18
OVERALL REL STD DEV, %	22.43	38.68	35.60	34.89	34.81	39.82	25.86	30.83	39.90	47.11	28.66	28.47
SINGLE STD DEV, (SR)	61.40		88.12		77.53		67.87		92.23		63.64	
ANALYST REL DEV, %	13.42		18.71		14.50		13.26		17.71		12.52	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 53. STATISTICAL SUMMARY FOR *TRANS*-1,2-DICHLOROETHENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	19	20	18	16	20	19	19	19	19	19	18	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.31	9.86	6.74	8.77	7.13	9.54	6.40	8.90	7.42	9.96	7.23	9.39
ACCURACY(%REL ERROR)	-8.64	-1.39	-15.71	-12.31	-10.91	-4.63	-20.06	-10.99	-7.24	-0.39	-9.67	-6.11
OVERALL STD DEV (S)	2.29	4.28	3.03	2.21	2.56	1.68	2.54	2.89	2.55	3.29	3.21	3.78
OVERALL REL STD DEV, %	31.35	43.38	44.96	25.23	35.92	17.59	39.74	32.45	34.37	33.06	44.47	40.31
SINGLE STD DEV, (SR)	2.49		1.58		1.36		1.27		2.03		2.34	
ANALYST REL DEV, %	29.01		20.35		16.27		16.58		23.37		28.20	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	18	19	18	18	19	20	18	19	18	17	19	18
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	38.02	50.70	39.79	48.56	41.11	52.34	40.70	53.35	41.39	50.46	40.48	54.79
ACCURACY(%REL ERROR)	-4.96	1.40	-0.53	-2.88	2.76	4.69	1.75	6.71	3.49	0.92	1.21	9.59
OVERALL STD DEV (S)	3.79	5.43	11.05	10.49	7.01	12.83	10.60	11.71	6.53	7.24	14.48	12.65
OVERALL REL STD DEV, %	9.96	10.70	27.77	21.60	17.07	24.52	26.04	21.95	15.78	14.34	35.77	23.09
SINGLE STD DEV, (SR)	3.43		6.82		5.26		5.25		4.33		7.94	
ANALYST REL DEV, %	7.73		15.45		11.26		11.15		9.43		16.68	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	20	20	19	19	20	20	19	19	17	19	19	19
TRUE CONC (C) UG/L	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00
MEAN RECOVERY (X)	386.80	462.90	393.89	463.32	410.75	491.60	394.63	482.21	394.53	476.89	407.84	478.26
ACCURACY(%REL ERROR)	-3.30	-7.42	-1.53	-7.34	2.69	-1.68	-1.34	-3.56	-1.37	-4.62	1.96	-4.35
OVERALL STD DEV (S)	74.49	133.11	83.53	140.77	76.45	130.40	85.35	135.62	51.24	115.38	119.35	135.48
OVERALL REL STD DEV, %	19.26	28.76	21.21	30.38	18.61	26.53	21.63	28.12	12.99	24.19	29.26	28.33
SINGLE STD DEV, (SR)	70.29		76.08		58.13		63.70		55.75		61.01	
ANALYST REL DEV, %	16.55		17.75		12.88		14.53		12.80		13.77	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 54. STATISTICAL SUMMARY FOR 1,1,1-TRICHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	16	18	16	18	18	17	17	19	17	15	19
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.16	8.56	7.46	8.73	7.40	9.25	7.19	8.32	7.68	9.66	6.68	13.59
ACCURACY(%REL ERROR)	-10.55	-14.44	-6.69	-12.71	-7.49	-7.49	-10.13	-16.82	-4.05	-3.39	-16.56	35.89
OVERALL STD DEV (S)	1.63	2.62	1.56	1.31	1.07	1.58	3.31	3.83	2.54	3.34	1.19	7.82
OVERALL REL STD DEV, %	22.79	30.66	20.95	15.02	14.39	17.07	46.09	46.02	33.06	34.56	17.78	57.53
SINGLE STD DEV, (SR)	1.22		0.88		1.06		2.85		2.95		4.73	
ANALYST REL DEV, %	15.59		10.85		12.72		36.70		34.00		46.67	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	18	17	17	17	17	18	17	17	19	18
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	36.84	49.80	38.59	50.48	40.83	47.96	38.05	52.72	38.39	46.15	48.52	63.25
ACCURACY(%REL ERROR)	-7.90	-0.40	-3.53	0.95	2.07	-4.07	-4.87	5.43	-4.01	-7.69	21.29	26.50
OVERALL STD DEV (S)	4.83	6.16	9.84	9.03	5.88	8.82	12.85	14.74	8.91	7.11	18.17	26.08
OVERALL REL STD DEV, %	13.10	12.37	25.50	17.89	14.40	18.38	33.77	27.97	23.21	15.41	37.46	41.23
SINGLE STD DEV, (SR)	5.27		2.70		5.03		7.68		3.53		13.02	
ANALYST REL DEV, %	12.18		6.06		11.33		16.92		8.34		23.29	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	18	18	19	17	17	19	19	18	18	19	19
TRUE CONC (C) UG/L	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
MEAN RECOVERY (X)	363.83	403.61	368.56	401.25	377.24	420.35	370.42	416.63	382.78	427.33	412.26	454.37
ACCURACY(%REL ERROR)	-8.81	-19.28	-7.63	-19.75	-5.45	-15.93	-7.16	-16.67	-4.07	-14.53	3.32	-9.13
OVERALL STD DEV (S)	80.17	127.19	78.04	159.25	78.14	138.20	99.10	149.31	92.21	121.38	107.13	140.45
OVERALL REL STD DEV, %	22.03	31.51	21.17	39.69	20.71	32.88	26.75	35.84	24.09	28.40	25.99	30.91
SINGLE STD DEV, (SR)	64.82		75.02		65.61		67.25		61.29		79.12	
ANALYST REL DEV, %	16.89		19.49		16.45		17.09		15.13		18.26	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 55. STATISTICAL SUMMARY FOR TRICHLOROETHENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	17	18	18	18	17	17	16	15	16	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.40	9.05	7.12	9.24	6.81	8.95	7.94	9.21	7.57	9.49	8.22	10.12
ACCURACY(%REL ERROR)	-7.52	-9.50	-11.03	-7.59	-14.83	-10.47	-0.79	-7.86	-5.31	-5.11	2.70	1.25
OVERALL STD DEV (S)	2.49	1.92	1.66	2.63	1.83	2.14	3.40	4.19	2.71	2.36	2.92	3.12
OVERALL REL STD DEV, %	33.65	21.21	23.39	28.49	26.88	23.96	42.90	45.51	35.80	24.92	35.57	30.81
SINGLE STD DEV, (SR)	1.07		1.29		0.67		3.07		0.96		2.18	
ANALYST REL DEV, %	13.04		15.72		8.55		35.77		11.31		23.77	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	16	17	18	16	18	17	16	16	16	15	15
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	76.24	95.99	79.69	98.37	76.74	103.43	74.55	96.62	79.48	92.08	76.71	104.14
ACCURACY(%REL ERROR)	-4.70	-4.01	-0.38	-1.63	-4.07	3.43	-6.81	-3.38	-0.65	-7.92	-4.12	4.14
OVERALL STD DEV (S)	7.18	12.93	18.01	22.98	17.35	37.88	21.20	23.26	16.19	20.88	19.34	24.09
OVERALL REL STD DEV, %	9.41	13.47	22.60	23.36	22.61	36.62	28.43	24.08	20.37	22.67	25.21	23.13
SINGLE STD DEV, (SR)	7.87		8.19		10.90		7.40		13.96		13.75	
ANALYST REL DEV, %	9.14		9.20		12.09		8.64		16.27		15.21	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	13	17	18	18	16	18	16	15	16	16	16	15
TRUE CONC (C) UG/L	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
MEAN RECOVERY (X)	324.78	386.94	358.94	408.83	351.06	499.39	344.75	431.93	392.94	453.19	362.81	416.00
ACCURACY(%REL ERROR)	-18.60	-22.77	-10.04	-18.40	-12.01	-0.32	-13.60	-13.79	-1.52	-9.54	-9.07	-16.97
OVERALL STD DEV (S)	110.26	142.24	124.49	182.90	99.20	287.00	97.27	136.46	96.27	149.48	105.16	146.21
OVERALL REL STD DEV, %	33.95	36.76	34.68	44.74	28.26	57.47	28.22	31.59	24.50	32.98	28.99	35.15
SINGLE STD DEV, (SR)	59.58		62.16		59.85		52.13		65.97		59.50	
ANALYST REL DEV, %	16.74		16.19		14.07		13.42		15.59		15.28	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 56. STATISTICAL SUMMARY FOR DIBROMOCHLOROMETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	15	16	16	15	16	16	17	16	17	16
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	12.49	8.52	12.57	9.67	10.53	7.96	11.50	8.99	13.23	8.95	12.96	11.65
ACCURACY(%REL ERROR)	56.16	-14.81	57.12	-3.25	31.62	-20.35	43.80	-10.13	65.42	-10.54	62.05	16.54
OVERALL STD DEV (S)	6.51	2.97	4.50	2.79	5.60	2.55	5.93	4.60	6.33	4.50	4.47	4.76
OVERALL REL STD DEV, %	52.10	34.85	35.81	28.87	53.17	32.06	51.54	51.24	47.85	50.31	34.51	40.81
SINGLE STD DEV, (SR)	2.28		2.63		2.29		4.22		4.11		2.06	
ANALYST REL DEV, %	21.67		23.67		24.80		41.22		37.06		16.70	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	16	17	16	16	16	15	17	17	16	16
TRUE CONC (C) UG/L	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00	80.00	102.00
MEAN RECOVERY (X)	79.05	105.81	81.10	110.90	78.12	100.99	75.29	101.65	82.30	103.04	80.24	111.35
ACCURACY(%REL ERROR)	-1.19	3.73	1.37	8.73	-2.35	-0.99	-5.88	-0.34	2.87	1.02	0.30	9.17
OVERALL STD DEV (S)	13.96	16.67	17.97	25.43	13.68	25.99	14.96	20.84	19.30	24.19	24.65	27.89
OVERALL REL STD DEV, %	17.66	15.76	22.16	22.93	17.51	25.73	19.87	20.50	23.45	23.47	30.72	25.05
SINGLE STD DEV, (SR)	8.40		8.99		12.37		8.03		8.62		13.17	
ANALYST REL DEV, %	9.09		9.36		13.82		9.08		9.30		13.75	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	17	17	16	17	16	16	14	14	17	17	17	16
TRUE CONC (C) UG/L	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
MEAN RECOVERY (X)	373.47	464.61	406.56	456.65	373.06	438.66	370.86	461.00	378.53	475.59	389.18	466.19
ACCURACY(%REL ERROR)	-6.63	-4.79	1.64	-6.42	-6.73	-10.11	-7.29	-5.53	-5.37	-2.54	-2.71	-4.47
OVERALL STD DEV (S)	100.41	154.73	68.63	144.77	87.81	135.36	46.36	66.40	102.77	143.94	124.82	129.37
OVERALL REL STD DEV, %	26.89	33.30	16.88	31.70	23.54	30.86	12.50	14.40	27.15	30.27	32.07	27.75
SINGLE STD DEV, (SR)	58.53		49.73		45.37		23.24		58.73		53.54	
ANALYST REL DEV, %	13.97		11.52		11.18		5.59		13.75		12.52	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 57. STATISTICAL SUMMARY FOR 2-CHLOROETHYLVINYL ETHER ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	15	17	14	15	15	18	15	18	16	15	14	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.14	11.80	6.83	8.03	6.85	7.30	7.98	9.77	7.28	7.24	7.21	8.07
ACCURACY(%REL ERROR)	-10.69	18.01	-14.65	-19.72	-14.33	-26.95	-0.28	-2.31	-8.96	-27.61	-9.92	-19.28
OVERALL STD DEV (S)	2.98	7.20	3.10	3.82	2.36	3.16	3.01	4.59	2.55	2.82	2.24	4.26
OVERALL REL STD DEV, %	41.71	61.04	45.39	47.58	34.41	43.24	37.69	46.95	34.98	38.99	31.12	52.81
SINGLE STD DEV, (SR)	2.87		1.82		1.57		1.71		2.09		2.99	
ANALYST REL DEV, %	30.34		24.46		22.18		19.22		28.79		39.09	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	13	15	15	16	15	16	15	15	13	15	14
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	69.48	96.98	59.32	71.97	68.64	87.89	79.74	102.16	67.68	85.18	68.47	91.46
ACCURACY(%REL ERROR)	-13.15	-3.02	-25.86	-28.03	-14.20	-12.11	-0.33	2.16	-15.40	-14.82	-14.42	-8.54
OVERALL STD DEV (S)	23.40	20.24	26.59	33.73	29.98	37.00	28.66	46.77	24.57	27.34	31.61	49.13
OVERALL REL STD DEV, %	33.67	20.87	44.83	46.86	43.68	42.10	35.95	45.78	36.30	32.10	46.17	53.71
SINGLE STD DEV, (SR)	17.93		24.16		35.22		21.18		21.32		28.67	
ANALYST REL DEV, %	21.54		36.80		45.00		23.28		27.89		35.86	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	0	0	0	0	0	0	0	3	0	0	0	0
TRUE CONC (C) UG/L	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00	398.00	501.00
MEAN RECOVERY (X)	UND	UND	UND	UND	UND	UND	UND	160.67	UND	UND	UND	UND
ACCURACY(%REL ERROR)	UND	UND	UND	UND	UND	UND	UND	-67.93	UND	UND	UND	UND
OVERALL STD DEV (S)	UND	UND	UND	UND	UND	UND	UND	99.06	UND	UND	UND	UND
OVERALL REL STD DEV, %	UND	UND	UND	UND	UND	UND	UND	61.65	UND	UND	UND	UND
SINGLE STD DEV, (SR)	0.00		0.00		0.00		0.00		0.00		0.00	
ANALYST REL DEV, %	0.00		0.00		0.00		0.00		0.00		0.00	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 58. STATISTICAL SUMMARY FOR TETRACHLOROETHENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	18	18	16	18	18	19	10	10	18	18	17	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.77	9.02	7.48	10.65	6.75	9.49	7.54	7.35	7.78	9.00	9.12	10.44
ACCURACY(%REL ERROR)	-2.86	-9.81	-6.52	6.53	-15.60	-5.06	-5.69	-26.54	-2.81	-9.98	14.02	4.39
OVERALL STD DEV (S)	3.88	3.73	2.05	4.15	1.94	3.08	5.48	4.53	3.02	2.47	3.64	3.64
OVERALL REL STD DEV, %	49.93	41.33	27.41	38.99	28.68	32.40	72.59	61.64	38.84	27.39	39.95	34.87
SINGLE STD DEV, (SR)	1.59		2.62		1.83		4.26		1.74		2.31	
ANALYST REL DEV, %	18.90		28.88		22.52		57.24		20.69		23.67	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	19	19	18	19	19	19	16	17	18	19	18	17
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	77.61	100.45	82.38	103.42	79.16	99.12	71.33	82.66	82.11	97.99	84.81	104.67
ACCURACY(%REL ERROR)	-2.99	0.45	2.98	3.42	-1.05	-0.88	-10.84	-17.34	2.63	-2.01	6.01	4.67
OVERALL STD DEV (S)	5.63	12.11	14.47	15.86	9.58	13.08	24.89	25.96	12.01	26.53	23.11	20.17
OVERALL REL STD DEV, %	7.26	12.05	17.57	15.33	12.10	13.20	34.90	31.40	14.63	27.07	27.25	19.27
SINGLE STD DEV, (SR)	7.30		6.80		6.62		7.93		10.88		8.71	
ANALYST REL DEV, %	8.20		7.32		7.42		10.29		12.08		9.20	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	20	20	19	19	20	20	17	17	19	19	17	17
TRUE CONC (C) UG/L	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
MEAN RECOVERY (X)	366.65	437.25	363.95	432.32	384.75	453.45	356.71	405.18	371.00	453.89	376.94	425.94
ACCURACY(%REL ERROR)	-8.11	-12.55	-8.79	-13.54	-3.57	-9.31	-10.60	-18.96	-7.02	-9.22	-5.53	-14.81
OVERALL STD DEV (S)	95.29	144.97	93.39	163.58	110.32	152.51	125.82	187.36	116.03	150.28	100.27	136.99
OVERALL REL STD DEV, %	25.99	33.15	25.66	37.84	28.67	33.63	35.27	46.24	31.28	33.11	26.60	32.16
SINGLE STD DEV, (SR)	79.25		111.52		82.63		138.99		96.39		69.33	
ANALYST REL DEV, %	19.72		28.01		19.72		36.49		23.37		17.27	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 59. STATISTICAL SUMMARY FOR 1,2-DICHLOROBENZENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	15	15	15	14	14	13	14	13	14	13	13	12
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	9.49	10.47	9.29	8.88	6.61	9.21	6.21	9.44	7.12	8.07	7.09	7.45
ACCURACY(%REL ERROR)	18.57	4.65	16.13	-11.21	-17.35	-7.88	-22.38	-5.65	-10.98	-19.27	-11.32	-25.52
OVERALL STD DEV (S)	7.52	7.30	5.87	1.97	1.75	1.84	4.36	5.43	2.78	2.51	2.50	3.58
OVERALL REL STD DEV, %	79.30	69.77	63.13	22.17	26.53	19.93	70.14	57.58	39.07	31.14	35.25	48.03
SINGLE STD DEV, (SR)	1.97		3.09		0.84		1.75		1.62		1.44	
ANALYST REL DEV, %	19.79		34.02		10.67		22.42		21.36		19.80	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	14	16	16	15	16	14	15	16	16	15	15
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	74.17	94.85	72.14	98.84	74.47	91.46	73.00	88.85	71.84	86.06	70.41	93.88
ACCURACY(%REL ERROR)	-7.28	-5.15	-9.82	-1.16	-6.92	-8.54	-8.75	-11.15	-10.20	-13.94	-11.98	-6.12
OVERALL STD DEV (S)	10.41	14.61	14.79	17.29	13.10	21.08	9.97	19.76	11.69	15.48	15.69	17.68
OVERALL REL STD DEV, %	14.03	15.41	20.49	17.50	17.59	23.05	13.66	22.24	16.28	17.98	22.29	18.84
SINGLE STD DEV, (SR)	9.63		12.00		8.35		9.49		9.88		11.07	
ANALYST REL DEV, %	11.40		14.04		10.06		11.72		12.52		13.48	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	16	16	17	16	16	16	16	16	17	17	15	15
TRUE CONC (C) UG/L	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
MEAN RECOVERY (X)	374.56	459.81	367.88	451.50	352.25	416.88	337.56	436.06	363.06	474.65	348.67	465.33
ACCURACY(%REL ERROR)	-6.12	-8.22	-7.80	-9.88	-11.72	-16.79	-15.40	-12.96	-9.01	-5.26	-12.61	-7.12
OVERALL STD DEV (S)	75.16	114.60	74.48	72.75	67.39	102.82	72.14	111.81	64.71	118.65	66.09	61.15
OVERALL REL STD DEV, %	20.07	24.92	20.25	16.11	19.13	24.66	21.37	25.64	17.82	25.00	18.95	13.14
SINGLE STD DEV, (SR)	51.21		50.74		45.40		63.65		58.25		32.06	
ANALYST REL DEV, %	12.28		12.38		11.81		16.46		13.91		7.88	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 60. STATISTICAL SUMMARY FOR BROMOMETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	17	17	16	16	17	17	17	17	14	15	13	14
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	5.00	6.73	4.72	7.16	6.06	6.63	6.30	8.70	5.33	7.71	6.11	7.83
ACCURACY(%REL ERROR)	-37.56	-32.69	-41.04	-28.39	-24.21	-33.73	-21.19	-12.99	-33.42	-22.91	-23.63	-21.66
OVERALL STD DEV (S)	2.77	3.25	2.08	4.02	4.12	4.33	3.73	5.96	2.55	4.45	3.14	4.61
OVERALL REL STD DEV, %	55.42	48.32	44.16	56.19	67.89	65.35	59.18	68.55	47.82	57.67	51.36	58.90
SINGLE STD DEV, (SR)	1.80		1.55		2.79		2.49		3.40		1.46	
ANALYST REL DEV, %	30.69		26.17		43.94		33.15		52.18		21.01	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	18	18	18	16	18	15	15	14	14	15	15
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	24.98	51.69	44.19	63.83	29.44	52.39	28.78	38.41	29.54	42.96	27.74	38.27
ACCURACY(%REL ERROR)	-68.77	-48.31	-44.76	-36.17	-63.20	-47.61	-64.03	-61.59	-63.07	-57.04	-65.32	-61.73
OVERALL STD DEV (S)	6.51	37.44	34.06	45.45	10.12	28.26	13.68	17.71	11.02	17.50	14.01	16.55
OVERALL REL STD DEV, %	26.08	72.43	77.08	71.19	34.38	53.94	47.54	46.11	37.31	40.74	50.50	43.23
SINGLE STD DEV, (SR)	17.47		11.83		11.69		4.60		8.21		5.13	
ANALYST REL DEV, %	45.58		21.91		28.57		13.70		22.65		15.55	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	15	18	18	18	18	14	16	13	15	13	14
TRUE CONC (C) UG/L	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00	398.00	499.00
MEAN RECOVERY (X)	443.44	505.40	524.67	727.17	514.56	674.11	421.07	632.88	422.08	663.00	378.69	517.21
ACCURACY(%REL ERROR)	11.42	1.28	31.83	45.72	29.29	35.09	5.80	26.83	6.05	32.87	-4.85	3.65
OVERALL STD DEV (S)	142.93	100.41	259.97	437.14	264.68	305.07	109.10	305.68	92.39	398.85	47.49	84.16
OVERALL REL STD DEV, %	32.23	19.87	49.55	60.11	51.44	45.26	25.91	48.30	21.89	60.16	12.54	16.27
SINGLE STD DEV, (SR)	68.29		162.47		123.67		65.58		63.60		51.02	
ANALYST REL DEV, %	14.39		25.96		20.81		12.44		11.72		11.39	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 61. STATISTICAL SUMMARY FOR CHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	15	14	17	16	15	15	16	15	17	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.42	8.76	6.45	9.44	7.29	9.60	8.47	11.59	6.32	8.32	7.45	9.40
ACCURACY(%REL ERROR)	-19.71	-12.42	-19.32	-5.64	-8.92	-3.95	5.90	15.89	-21.04	-16.77	-6.89	-6.03
OVERALL STD DEV (S)	2.00	1.56	1.55	2.17	3.63	3.06	6.42	7.29	2.21	2.52	2.20	3.35
OVERALL REL STD DEV, %	31.07	17.81	23.99	22.95	49.76	31.83	75.75	62.91	35.02	30.29	29.48	35.65
SINGLE STD DEV, (SR)	0.86		1.19		1.56		1.28		1.64		1.85	
ANALYST REL DEV, %	11.33		14.99		18.49		12.77		22.43		21.95	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	14	14	13	14	17	18	14	14	16	16	17	17
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	33.01	45.35	36.74	49.91	37.47	56.92	36.03	46.73	38.94	53.30	37.85	48.22
ACCURACY(%REL ERROR)	-17.46	-9.30	-8.15	-0.19	-6.32	13.84	-9.93	-6.54	-2.64	6.60	-5.38	-3.55
OVERALL STD DEV (S)	7.69	8.82	9.34	10.07	11.66	21.60	7.52	10.81	14.04	18.93	13.72	18.77
OVERALL REL STD DEV, %	23.30	19.45	25.42	20.18	31.12	37.94	20.87	23.13	36.04	35.52	36.24	38.92
SINGLE STD DEV, (SR)	6.24		3.28		14.38		3.25		4.69		4.88	
ANALYST REL DEV, %	15.93		7.57		30.47		7.85		10.17		11.33	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	16	16	15	15	18	17	14	14	15	15	17	17
TRUE CONC (C) UG/L	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00	399.00	498.00
MEAN RECOVERY (X)	435.94	511.25	466.53	541.73	455.78	555.47	455.21	525.00	466.60	521.73	477.06	566.00
ACCURACY(%REL ERROR)	9.26	2.66	16.93	8.78	14.23	11.54	14.09	5.42	16.94	4.77	19.56	13.65
OVERALL STD DEV (S)	67.44	87.42	82.94	82.27	90.79	73.51	50.68	58.21	57.93	69.26	140.30	92.06
OVERALL REL STD DEV, %	15.47	17.10	17.78	15.19	19.92	13.23	11.13	11.09	12.42	13.28	29.41	16.26
SINGLE STD DEV, (SR)	53.44		36.65		43.64		44.45		30.20		54.55	
ANALYST REL DEV, %	11.28		7.27		8.63		9.07		6.11		10.46	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 62. STATISTICAL SUMMARY FOR 1,1-DICHLOROETHENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	19	19	18	18	18	17	17	17	17	17	14	14
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.47	9.35	6.50	9.60	7.28	10.58	6.93	9.58	6.07	9.03	7.12	9.50
ACCURACY(%REL ERROR)	-19.13	-6.51	-18.75	-3.99	-9.00	5.79	-13.34	-4.24	-24.18	-9.70	-11.03	-5.02
OVERALL STD DEV (S)	1.82	1.84	1.52	1.80	3.41	2.38	2.26	2.91	2.15	3.49	2.22	2.44
OVERALL REL STD DEV, %	28.17	19.64	23.45	18.75	46.77	22.53	32.65	30.43	35.43	38.61	31.13	25.73
SINGLE STD DEV, (SR)	1.40		1.08		2.30		0.81		2.37		0.55	
ANALYST REL DEV, %	17.76		13.48		25.74		9.83		31.39		6.57	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	19	18	18	17	17	16	16	17	16	13	14
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	37.78	57.44	43.48	57.17	39.61	53.39	39.37	52.83	45.95	56.86	43.12	53.24
ACCURACY(%REL ERROR)	-5.54	14.88	8.71	14.34	-0.97	6.78	-1.58	5.66	14.87	13.71	7.81	6.47
OVERALL STD DEV (S)	6.40	19.64	13.83	19.80	6.35	9.43	10.53	15.27	14.63	16.66	7.68	15.95
OVERALL REL STD DEV, %	16.94	34.19	31.81	34.63	16.04	17.67	26.75	28.91	31.85	29.30	17.82	29.96
SINGLE STD DEV, (SR)	11.63		5.81		6.59		4.93		3.21		7.05	
ANALYST REL DEV, %	24.43		11.53		14.17		10.69		6.24		14.63	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	19	19	18	17	18	18	16	16	17	17	13	13
TRUE CONC (C) UG/L	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
MEAN RECOVERY (X)	422.79	367.84	453.28	363.35	445.50	371.06	406.14	341.19	445.18	382.53	457.77	391.38
ACCURACY(%REL ERROR)	5.70	-26.28	13.32	-27.18	11.37	-25.64	1.54	-31.63	11.29	-23.34	14.44	-21.57
OVERALL STD DEV (S)	139.77	116.84	154.01	89.28	135.08	98.67	156.20	109.27	144.80	125.81	76.95	80.82
OVERALL REL STD DEV, %	33.06	31.76	33.98	24.57	30.32	26.59	38.46	32.03	32.53	32.89	16.81	20.65
SINGLE STD DEV, (SR)	71.16		50.39		36.01		87.91		44.51		50.97	
ANALYST REL DEV, %	18.00		12.34		8.82		23.53		10.76		12.00	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 63. STATISTICAL SUMMARY FOR CHLOROFORM ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	20	20	17	16	18	19	17	19	20	19	12	13
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.83	8.97	11.47	11.08	7.10	10.80	7.87	8.98	6.72	9.17	7.59	10.21
ACCURACY(%REL ERROR)	-14.61	-10.33	43.32	10.82	-11.25	7.97	-1.63	-10.23	-15.94	-8.27	-5.09	2.13
OVERALL STD DEV (S)	1.33	1.72	9.28	5.43	1.67	3.72	2.42	2.79	1.52	1.33	2.48	6.47
OVERALL REL STD DEV, %	19.53	19.14	80.91	48.98	23.51	34.45	30.76	31.03	22.68	14.47	32.68	63.31
SINGLE STD DEV, (SR)	1.20		6.25		2.50		1.54		1.59		3.65	
ANALYST REL DEV, %	15.19		55.45		27.90		18.25		20.04		41.03	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	19	20	18	16	20	20	19	20	20	19	17	17
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	39.65	48.18	40.33	48.17	38.48	51.00	38.76	44.90	40.14	47.29	40.44	45.02
ACCURACY(%REL ERROR)	-0.87	-3.64	0.82	-3.66	-3.80	2.01	-3.11	-10.19	0.35	-5.42	1.09	-9.96
OVERALL STD DEV (S)	3.92	8.79	10.27	5.51	3.46	11.42	7.07	9.01	6.55	6.33	10.69	12.11
OVERALL REL STD DEV, %	9.89	18.24	25.45	11.44	8.99	22.40	18.25	20.07	16.33	13.39	26.44	26.90
SINGLE STD DEV, (SR)	5.28		6.63		7.71		7.01		3.86		5.68	
ANALYST REL DEV, %	12.03		14.98		17.23		16.77		8.84		13.29	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	20	20	16	17	19	20	19	20	20	20	16	16
TRUE CONC (C) UG/L	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00	400.00	501.00
MEAN RECOVERY (X)	358.30	431.30	372.69	449.18	353.58	462.80	367.89	421.45	363.05	454.65	382.56	468.88
ACCURACY(%REL ERROR)	-10.43	-13.91	-6.83	-10.34	-11.61	-7.62	-8.03	-15.88	-9.24	-9.25	-4.36	-6.41
OVERALL STD DEV (S)	73.91	107.09	40.48	71.03	74.97	123.09	46.38	108.45	64.45	103.24	52.30	82.32
OVERALL REL STD DEV, %	20.63	24.83	10.86	15.81	21.20	26.60	12.61	25.73	17.75	22.71	13.67	17.56
SINGLE STD DEV, (SR)	56.16		36.28		42.06		44.26		52.58		37.82	
ANALYST REL DEV, %	14.23		8.83		10.30		11.21		12.86		8.88	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 64. STATISTICAL SUMMARY FOR CARBON TETRACHLORIDE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	19	19	18	19	14	17	16	16	17	17	16	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.62	8.99	6.19	7.04	7.20	9.10	5.72	6.53	6.97	8.46	6.53	8.66
ACCURACY(%REL ERROR)	-17.28	-10.11	-22.56	-29.55	-10.05	-9.01	-28.45	-34.74	-12.83	-15.42	-18.43	-13.39
OVERALL STD DEV (S)	1.87	1.81	2.05	2.89	1.11	1.51	2.56	2.40	1.52	2.74	3.80	5.19
OVERALL REL STD DEV, %	28.31	20.13	33.06	41.03	15.47	16.55	44.73	36.79	21.85	32.44	58.26	59.87
SINGLE STD DEV, (SR)	1.52		2.20		0.80		1.52		2.01		1.80	
ANALYST REL DEV, %	19.53		33.25		9.79		24.81		26.01		23.69	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	19	19	18	19	16	18	17	17	19	19	19	19
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	39.37	48.43	37.42	50.96	37.36	49.16	34.79	44.51	36.37	45.11	40.86	46.24
ACCURACY(%REL ERROR)	-1.58	-3.15	-6.44	1.93	-6.59	-1.68	-13.03	-10.98	-9.07	-9.78	2.15	-7.53
OVERALL STD DEV (S)	7.49	10.75	8.84	14.26	4.67	13.94	9.91	12.44	8.82	13.03	18.17	14.73
OVERALL REL STD DEV, %	19.02	22.20	23.63	27.99	12.49	28.36	28.48	27.95	24.25	28.88	44.46	31.86
SINGLE STD DEV, (SR)	7.35		5.95		7.51		4.08		4.54		6.48	
ANALYST REL DEV, %	16.75		13.47		17.36		10.30		11.15		14.87	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	19	19	19	19	18	18	18	18	19	18	18	18
TRUE CONC (C) UG/L	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00	399.00	501.00
MEAN RECOVERY (X)	392.58	470.95	394.16	482.79	376.39	465.67	375.67	445.50	392.37	478.67	412.00	513.39
ACCURACY(%REL ERROR)	-1.61	-6.00	-1.21	-3.63	-5.67	-7.05	-5.85	-11.08	-1.66	-4.46	3.26	2.47
OVERALL STD DEV (S)	69.16	106.76	68.93	89.06	64.15	90.65	82.56	98.01	75.78	71.89	50.08	77.03
OVERALL REL STD DEV, %	17.62	22.67	17.49	18.45	17.04	19.47	21.98	22.00	19.31	15.02	12.15	15.00
SINGLE STD DEV, (SR)	60.94		42.20		39.19		47.62		41.61		35.42	
ANALYST REL DEV, %	14.11		9.62		9.31		11.60		9.55		7.65	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 65. STATISTICAL SUMMARY FOR *TRANS*-1,3-DICHLOROPROPENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	16	16	16	16	17	7	4	16	15	13	12
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	5.85	7.66	5.87	7.01	7.05	8.64	5.35	8.34	6.25	7.70	7.36	9.50
ACCURACY(%REL ERROR)	-26.88	-23.39	-26.56	-29.89	-11.86	-13.61	-33.07	-16.55	-21.91	-22.97	-8.04	-4.95
OVERALL STD DEV (S)	2.78	3.82	2.79	3.98	3.47	4.02	5.96	4.47	3.79	2.83	5.98	5.60
OVERALL REL STD DEV, %	47.58	49.87	47.46	56.76	49.18	46.57	111.31	53.57	60.72	36.70	81.24	58.89
SINGLE STD DEV, (SR)	1.84		1.52		2.39		3.07		2.06		1.10	
ANALYST REL DEV, %	27.30		23.63		30.42		44.82		29.57		13.00	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	15	15	15	16	16	12	13	16	16	17	18
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	58.39	69.73	53.28	66.24	61.41	76.96	45.49	98.96	77.60	89.46	63.16	78.62
ACCURACY(%REL ERROR)	-27.01	-30.27	-33.40	-33.76	-23.24	-23.04	-43.14	-1.04	-3.00	-10.54	-21.04	-21.38
OVERALL STD DEV (S)	23.43	32.00	21.22	30.49	21.92	37.64	31.17	93.25	40.13	48.05	38.31	50.29
OVERALL REL STD DEV, %	40.12	45.89	39.83	46.03	35.70	48.91	68.53	94.23	51.71	53.71	60.66	63.96
SINGLE STD DEV, (SR)	9.73		9.97		12.75		21.11		10.58		17.27	
ANALYST REL DEV, %	15.19		16.69		18.42		29.23		12.67		24.37	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	16	16	16	16	17	17	16	17	16	16	18	18
TRUE CONC (C) UG/L	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
MEAN RECOVERY (X)	302.64	378.63	291.94	341.44	302.71	355.12	278.28	295.07	339.25	370.81	329.27	361.94
ACCURACY(%REL ERROR)	-24.34	-22.41	-27.02	-30.03	-24.32	-27.23	-30.43	-39.53	-15.19	-24.01	-17.68	-25.83
OVERALL STD DEV (S)	117.46	142.29	119.18	114.09	105.64	135.00	173.10	143.13	99.60	113.78	133.46	170.70
OVERALL REL STD DEV, %	38.81	37.58	40.82	33.41	34.90	38.02	62.20	48.51	29.36	30.68	40.53	47.16
SINGLE STD DEV, (SR)	54.56		39.32		60.10		83.31		41.53		52.51	
ANALYST REL DEV, %	16.02		12.42		18.27		29.06		11.70		15.19	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 66. STATISTICAL SUMMARY FOR 1,1,2-TRICHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	16	15	15	18	18	17	17	17	17	18	19
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.90	8.76	7.72	8.86	7.37	8.68	6.03	8.19	6.97	8.96	7.13	9.26
ACCURACY(%REL ERROR)	-13.74	-12.43	-3.49	-11.35	-7.83	-13.18	-24.60	-18.13	-12.90	-10.38	-10.85	-7.38
OVERALL STD DEV (S)	2.51	2.62	1.94	2.61	2.67	2.47	2.91	3.66	1.89	2.91	3.53	3.38
OVERALL REL STD DEV, %	36.41	29.92	25.14	29.48	36.25	28.39	48.22	44.65	27.18	32.46	49.44	36.55
SINGLE STD DEV, (SR)	0.94		1.50		1.39		1.31		1.54		2.18	
ANALYST REL DEV, %	12.06		18.08		17.33		18.42		19.35		26.63	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	16	16	14	15	17	18	16	17	17	17	18	19
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	69.26	85.18	67.43	85.39	67.46	89.33	65.27	73.91	72.99	90.28	75.37	93.32
ACCURACY(%REL ERROR)	-13.43	-14.82	-15.71	-14.61	-15.68	-10.67	-18.41	-26.09	-8.76	-9.72	-5.78	-6.68
OVERALL STD DEV (S)	9.23	19.19	12.66	18.83	9.79	17.22	14.14	17.17	11.62	17.74	18.49	26.02
OVERALL REL STD DEV, %	13.32	22.53	18.78	22.05	14.52	19.27	21.66	23.23	15.92	19.66	24.53	27.88
SINGLE STD DEV, (SR)	10.02		7.00		11.98		13.13		6.01		9.47	
ANALYST REL DEV, %	12.98		9.17		15.29		18.87		7.36		11.23	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	15	16	12	14	17	18	17	17	17	17	19	18
TRUE CONC (C) UG/L	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00	401.00	499.00
MEAN RECOVERY (X)	367.67	416.44	347.25	403.71	335.12	429.39	322.29	375.47	381.29	462.24	365.05	453.06
ACCURACY(%REL ERROR)	-8.31	-16.55	-13.40	-19.10	-16.43	-13.95	-19.63	-24.76	-4.91	-7.37	-8.96	-9.21
OVERALL STD DEV (S)	53.98	103.17	37.22	102.51	91.96	122.20	91.70	99.72	76.58	99.67	86.45	84.23
OVERALL REL STD DEV, %	14.68	24.77	10.72	25.39	27.44	28.46	28.45	26.56	20.08	21.56	23.68	18.59
SINGLE STD DEV, (SR)	48.03		19.36		34.50		50.88		46.96		29.99	
ANALYST REL DEV, %	12.25		5.16		9.03		14.58		11.13		7.33	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 67. STATISTICAL SUMMARY FOR BROMOFORM ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	18	14	16	18	18	14	15	18	18	17	18
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	5.64	7.54	5.88	9.14	6.26	8.82	7.09	8.54	6.61	7.69	7.06	9.23
ACCURACY(%REL ERROR)	-29.45	-24.64	-26.48	-8.59	-21.79	-11.75	-11.35	-14.61	-17.38	-23.12	-11.74	-7.69
OVERALL STD DEV (S)	3.41	4.36	2.34	4.28	2.68	3.08	2.96	4.07	4.22	4.61	3.81	4.95
OVERALL REL STD DEV, %	60.34	57.90	39.74	46.84	42.81	34.85	41.73	47.72	63.91	59.99	53.91	53.63
SINGLE ANALYST STD DEV, (SR)	1.40		0.96		1.73		1.70		3.41		3.18	
SINGLE ANALYST REL DEV, %	21.27		12.72		22.88		21.72		47.70		39.03	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	18	17	17	19	19	17	17	19	19	19	19
TRUE CONC (C) UG/L	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00	80.00	101.00
MEAN RECOVERY (X)	70.55	95.62	79.42	107.97	75.20	108.72	70.40	88.77	73.37	97.06	73.75	99.45
ACCURACY(%REL ERROR)	-11.82	-5.32	-0.72	6.90	-6.00	7.64	-12.00	-12.11	-8.29	-3.90	-7.82	-1.53
OVERALL STD DEV (S)	12.07	24.22	19.10	32.28	17.55	35.52	18.66	24.14	18.43	23.22	23.86	33.61
OVERALL REL STD DEV, %	17.10	25.33	24.05	29.90	23.33	32.67	26.50	27.19	25.12	23.92	32.35	33.80
SINGLE ANALYST STD DEV, (SR)	11.52		12.47		19.91		14.11		5.72		16.98	
SINGLE ANALYST REL DEV, %	13.86		13.31		21.65		17.73		6.72		19.60	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	17	17	16	16	17	18	16	15	18	19	18	17
TRUE CONC (C) UG/L	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
MEAN RECOVERY (X)	393.29	480.35	402.56	480.75	423.35	496.50	408.00	432.27	393.78	498.84	446.78	490.06
ACCURACY(%REL ERROR)	-1.43	-3.93	0.89	-3.85	6.10	-0.70	2.26	-13.55	-1.31	-0.23	11.97	-1.99
OVERALL STD DEV (S)	95.64	107.71	99.31	89.54	51.47	83.31	70.49	81.21	82.22	132.29	62.01	83.44
OVERALL REL STD DEV, %	24.32	22.42	24.67	18.63	12.16	16.78	17.28	18.79	20.88	26.52	13.88	17.03
SINGLE ANALYST STD DEV, (SR)	52.09		33.79		59.88		80.05		60.53		82.05	
SINGLE ANALYST REL DEV, %	11.92		7.65		13.02		19.05		13.56		17.52	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 68. STATISTICAL SUMMARY FOR CHLOROBENZENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	18	18	17	18	16	8	8	15	15	13	10
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.77	8.85	6.38	8.90	7.15	9.76	102.47	150.25	6.34	7.27	9.19	12.99
ACCURACY(%REL ERROR)	-15.39	-11.46	-20.27	-11.02	-10.60	-2.38	1180.94	1402.50	-20.73	-27.27	14.87	29.89
OVERALL STD DEV (S)	2.07	3.50	2.35	3.13	2.58	1.87	132.41	72.13	2.22	2.60	4.50	6.01
OVERALL REL STD DEV, %	30.59	39.51	36.82	35.22	36.12	19.20	129.21	48.01	35.04	35.81	48.97	46.29
SINGLE STD DEV, (SR)	1.11		2.26		2.01		82.71		1.31		4.28	
ANALYST REL DEV, %	14.15		29.63		23.80		65.45		19.19		38.57	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	18	18	18	19	17	8	8	16	16	17	17
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	80.18	100.27	79.36	99.56	82.52	96.16	170.07	251.63	72.94	90.95	83.63	92.24
ACCURACY(%REL ERROR)	0.23	0.27	-0.80	-0.44	3.14	-3.84	112.59	151.62	-8.82	-9.05	4.54	-7.76
OVERALL STD DEV (S)	10.77	21.78	13.83	19.73	20.03	20.49	149.09	152.50	12.69	19.74	28.12	34.61
OVERALL REL STD DEV, %	13.43	21.72	17.43	19.82	24.28	21.31	87.66	60.61	17.39	21.71	33.62	37.52
SINGLE STD DEV, (SR)	14.92		8.52		11.65		83.17		7.64		18.10	
ANALYST REL DEV, %	16.53		9.53		13.04		39.45		9.33		20.59	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	17	18	18	19	18	12	14	16	16	18	18
TRUE CONC (C) UG/L	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00	400.00	500.00
MEAN RECOVERY (X)	411.89	475.82	396.56	485.17	394.05	462.94	351.92	335.79	369.75	469.50	433.06	567.56
ACCURACY(%REL ERROR)	2.97	-4.84	-0.86	-2.97	-1.49	-7.41	-12.02	-32.84	-7.56	-6.10	8.26	13.51
OVERALL STD DEV (S)	81.23	89.84	51.84	88.98	58.84	80.92	244.98	200.92	95.35	92.91	155.08	223.99
OVERALL REL STD DEV, %	19.72	18.88	13.07	18.34	14.93	17.48	69.61	59.84	25.79	19.79	35.81	39.47
SINGLE STD DEV, (SR)	56.23		32.02		48.97		119.52		62.45		95.27	
ANALYST REL DEV, %	12.67		7.26		11.43		34.76		14.88		19.04	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 69. STATISTICAL SUMMARY FOR 1,4-DICHLOROBENZENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	18	16	15	15	16	15	16	17	15	17	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.50	9.06	6.89	8.70	7.18	10.32	7.88	9.82	6.88	7.95	5.80	8.63
ACCURACY(%REL ERROR)	-6.25	-9.36	-13.82	-12.97	-10.28	3.25	-1.48	-1.78	-13.99	-20.49	-27.49	-13.73
OVERALL STD DEV (S)	2.23	2.47	2.21	2.21	1.08	1.99	2.53	4.32	2.75	1.53	2.22	3.11
OVERALL REL STD DEV, %	29.69	27.21	32.09	25.36	15.00	19.32	32.15	44.03	39.98	19.24	38.26	35.99
SINGLE STD DEV, (SR)	1.09		1.45		1.62		2.44		1.72		2.29	
ANALYST REL DEV, %	13.16		18.54		18.55		27.54		23.15		31.80	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	19	18	16	18	17	16	19	18	19	19	18	19
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	81.09	89.86	78.78	94.69	76.09	94.06	79.68	98.51	73.26	98.41	88.99	97.80
ACCURACY(%REL ERROR)	1.37	-10.14	-1.52	-5.31	-4.89	-5.94	-0.40	-1.49	-8.42	-1.59	11.24	-2.20
OVERALL STD DEV (S)	33.46	38.63	11.84	36.51	15.50	15.17	32.56	35.40	31.47	36.46	34.01	35.27
OVERALL REL STD DEV, %	41.26	42.99	15.03	38.56	20.37	16.13	40.86	35.94	42.95	37.05	38.22	36.06
SINGLE STD DEV, (SR)	16.96		18.65		9.35		21.48		12.21		18.26	
ANALYST REL DEV, %	19.85		21.51		10.99		24.11		14.22		19.55	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	17	18	17	19	19	18	18	18	18	19	19
TRUE CONC (C) UG/L	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00	399.00	499.00
MEAN RECOVERY (X)	269.83	327.24	265.22	339.76	298.21	379.42	275.11	331.22	268.63	340.06	337.05	399.05
ACCURACY(%REL ERROR)	-32.37	-34.42	-33.53	-31.91	-25.26	-23.96	-31.05	-33.62	-32.67	-31.85	-15.53	-20.03
OVERALL STD DEV (S)	53.98	33.23	33.99	53.73	83.24	95.60	46.66	60.72	71.11	59.20	130.37	140.20
OVERALL REL STD DEV, %	20.00	10.16	12.81	15.81	27.91	25.20	16.96	18.33	26.47	17.41	38.68	35.13
SINGLE STD DEV, (SR)	25.09		34.45		26.77		34.54		25.83		52.55	
ANALYST REL DEV, %	8.41		11.39		7.90		11.39		8.49		14.28	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 70. STATISTICAL SUMMARY FOR METHYLENE CHLORIDE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	17	17	16	15	17	17	19	17	18	16
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.40	8.26	6.50	7.96	5.79	7.92	6.44	7.78	7.77	9.18	7.78	8.38
ACCURACY(%REL ERROR)	-20.00	-17.38	-18.76	-20.39	-27.56	-20.79	-19.56	-22.16	-2.89	-8.15	-2.72	-16.17
OVERALL STD DEV (S)	2.64	3.37	3.25	4.42	2.96	4.45	2.50	3.23	2.87	2.48	4.02	2.54
OVERALL REL STD DEV, %	41.31	40.78	50.07	55.54	50.99	56.16	38.81	41.43	36.98	27.02	51.61	30.31
SINGLE STD DEV, (SR)	1.16		1.69		2.02		1.63		1.36		2.46	
ANALYST REL DEV, %	15.84		23.34		29.41		22.95		16.09		30.38	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	17	19	16	16	18	18	18	19	19	20
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	34.55	43.05	36.50	45.09	36.92	45.98	39.62	49.38	38.54	49.85	38.33	46.47
ACCURACY(%REL ERROR)	-13.63	-13.91	-8.75	-9.82	-7.69	-8.04	-0.94	-1.23	-3.64	-0.29	-4.17	-7.06
OVERALL STD DEV (S)	9.07	9.37	5.57	7.06	8.34	9.70	9.78	8.21	12.93	11.87	11.93	14.51
OVERALL REL STD DEV, %	26.26	21.78	15.27	15.65	22.59	21.10	24.68	16.62	33.55	23.80	31.11	31.23
SINGLE STD DEV, (SR)	4.05		3.42		4.40		3.48		7.68		10.34	
ANALYST REL DEV, %	10.45		8.40		10.61		7.82		17.39		24.39	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	17	19	17	15	14	17	17	16	17	17	18
TRUE CONC (C) UG/L	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00	401.00	501.00
MEAN RECOVERY (X)	363.28	482.41	411.26	483.59	393.33	508.43	394.00	484.18	380.63	503.53	390.82	469.94
ACCURACY(%REL ERROR)	-9.41	-3.71	2.56	-3.48	-1.91	1.48	-1.75	-3.36	-5.08	0.50	-2.54	-6.20
OVERALL STD DEV (S)	94.21	81.08	113.42	91.55	63.04	44.79	79.61	90.65	61.22	82.23	43.84	75.17
OVERALL REL STD DEV, %	25.93	16.81	27.58	18.93	16.03	8.81	20.21	18.72	16.08	16.33	11.22	15.99
SINGLE STD DEV, (SR)	52.34		48.88		43.00		51.54		40.07		37.83	
ANALYST REL DEV, %	12.38		10.92		9.54		11.74		9.06		8.79	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 71. STATISTICAL SUMMARY FOR 1,1-DICHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	17	19	18	17	20	18	17	17	18	15	18	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	6.77	7.94	5.42	7.22	5.80	8.31	7.06	7.91	7.20	9.51	7.26	8.50
ACCURACY(%REL ERROR)	-15.43	-20.60	-32.19	-27.82	-27.47	-16.93	-11.76	-20.94	-10.06	-4.89	-9.24	-14.97
OVERALL STD DEV (S)	1.40	2.77	2.09	2.50	2.00	1.92	1.35	3.01	2.72	1.29	1.26	1.69
OVERALL REL STD DEV, %	20.72	34.90	38.45	34.70	34.48	23.07	19.08	38.12	37.75	13.58	17.29	19.86
SINGLE STD DEV, (SR)	0.80		1.07		1.08		1.62		1.25		1.13	
ANALYST REL DEV, %	10.92		16.94		15.35		21.58		14.99		14.33	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	20	18	17	18	20	20	17	18	18	18	18	19
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	38.02	45.83	34.97	45.20	36.40	47.90	39.51	49.25	37.83	46.95	38.24	47.21
ACCURACY(%REL ERROR)	-4.95	-8.33	-12.57	-9.60	-9.00	-4.20	-1.22	-1.50	-5.42	-6.10	-4.39	-5.58
OVERALL STD DEV (S)	7.68	7.22	5.31	8.75	7.47	8.02	5.14	10.87	8.07	9.31	5.21	10.13
OVERALL REL STD DEV, %	20.20	15.75	15.19	19.35	20.53	16.73	13.02	22.08	21.32	19.83	13.63	21.46
SINGLE STD DEV, (SR)	4.02		3.03		2.59		8.20		6.79		6.15	
ANALYST REL DEV, %	9.59		7.56		6.13		18.47		16.01		14.39	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	19	18	17	18	19	19	17	18	17	18	17	18
TRUE CONC (C) UG/L	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
MEAN RECOVERY (X)	382.95	463.56	390.47	434.22	386.32	472.89	402.94	460.67	386.94	476.50	384.94	460.50
ACCURACY(%REL ERROR)	-4.26	-7.10	-2.38	-12.98	-3.42	-5.23	0.74	-7.68	-3.26	-4.51	-3.76	-7.72
OVERALL STD DEV (S)	57.34	51.25	60.57	111.75	52.50	58.21	42.47	94.52	46.29	92.42	45.02	84.45
OVERALL REL STD DEV, %	14.97	11.06	15.51	25.73	13.59	12.31	10.54	20.52	11.96	19.40	11.70	18.34
SINGLE STD DEV, (SR)	35.17		47.66		28.16		41.34		50.13		42.15	
ANALYST REL DEV, %	8.31		11.56		6.56		9.57		11.61		9.97	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 72. STATISTICAL SUMMARY FOR 1,2-DICHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	16	17	15	19	18	14	13	18	15	9	8
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.06	9.71	7.68	10.03	6.25	8.43	21.05	15.62	8.45	9.96	53.23	56.07
ACCURACY(%REL ERROR)	-11.80	-2.89	-4.01	0.33	-21.85	-15.71	163.12	56.24	5.64	-0.43	565.42	460.75
OVERALL STD DEV (S)	1.97	2.60	2.46	3.22	1.79	2.88	18.16	12.63	2.57	2.50	56.90	53.59
OVERALL REL STD DEV, %	27.92	26.75	32.06	32.07	28.69	34.13	86.27	80.84	30.37	25.15	106.88	95.56
SINGLE STD DEV, (SR)	1.57		2.24		1.33		10.76		1.46		20.61	
ANALYST REL DEV, %	18.73		25.32		18.16		58.68		15.89		37.71	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	17	16	18	19	17	17	17	17	7	10
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	41.04	52.52	40.62	51.22	39.06	50.42	44.54	46.93	40.14	49.14	40.29	45.59
ACCURACY(%REL ERROR)	2.59	5.05	1.54	2.45	-2.35	0.83	11.36	-6.14	0.34	-1.72	0.71	-8.82
OVERALL STD DEV (S)	5.20	10.38	8.33	8.74	5.58	7.72	22.04	20.14	8.72	9.04	20.29	35.62
OVERALL REL STD DEV, %	12.66	19.76	20.51	17.07	14.28	15.31	49.48	42.91	21.72	18.40	50.36	78.13
SINGLE STD DEV, (SR)	6.02		4.57		4.83		16.43		4.06		30.17	
ANALYST REL DEV, %	12.88		9.96		10.81		35.92		9.10		70.26	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	16	16	17	17	19	18	17	18	16	18	17	17
TRUE CONC (C) UG/L	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
MEAN RECOVERY (X)	401.38	521.56	417.47	498.06	383.00	501.67	401.12	491.95	382.69	487.67	427.46	408.64
ACCURACY(%REL ERROR)	0.60	4.31	4.63	-0.39	-4.01	0.33	0.53	-1.61	-4.09	-2.47	7.13	-18.27
OVERALL STD DEV (S)	62.50	87.88	80.17	93.75	98.16	85.34	99.35	169.96	50.00	117.77	255.26	291.28
OVERALL REL STD DEV, %	15.57	16.85	19.20	18.82	25.63	17.01	24.77	34.55	13.07	24.15	59.72	71.28
SINGLE STD DEV, (SR)	45.86		30.38		34.06		86.05		49.63		135.33	
ANALYST REL DEV, %	9.94		6.64		7.70		19.27		11.40		32.37	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 73. STATISTICAL SUMMARY FOR BROMODICHLOROMETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	15	16	13	14	17	15	18	16	16	14	18	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	8.07	9.38	8.35	11.60	7.08	9.36	9.34	10.16	7.93	10.39	10.21	9.00
ACCURACY(%REL ERROR)	0.92	-6.19	4.40	16.04	-11.46	-6.40	16.75	1.64	-0.87	3.91	27.58	-10.05
OVERALL STD DEV (S)	2.56	3.08	4.10	6.17	2.41	2.78	5.19	3.39	2.90	3.30	5.25	3.18
OVERALL REL STD DEV, %	31.66	32.88	49.10	53.16	34.01	29.69	55.53	33.32	36.58	31.81	51.47	35.34
SINGLE STD DEV, (SR)	1.01		2.64		1.18		2.07		1.97		3.44	
ANALYST REL DEV, %	11.59		26.44		14.38		21.27		21.49		35.81	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	18	17	17	17	17	18	17	17	17	18	18
TRUE CONC (C) UG/L	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
MEAN RECOVERY (X)	50.72	58.72	47.09	53.15	50.64	58.24	53.23	55.08	50.25	56.39	48.84	57.21
ACCURACY(%REL ERROR)	26.81	17.44	17.72	6.29	26.60	16.47	33.07	10.16	25.63	12.78	22.11	14.41
OVERALL STD DEV (S)	7.20	11.99	9.46	14.38	7.52	6.93	12.88	11.32	9.71	10.14	14.13	11.71
OVERALL REL STD DEV, %	14.20	20.42	20.08	27.06	14.85	11.90	24.20	20.54	19.32	17.98	28.94	20.47
SINGLE STD DEV, (SR)	5.22		10.21		4.06		6.53		7.24		10.78	
ANALYST REL DEV, %	9.53		20.38		7.46		12.06		13.58		20.33	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	18	16	16	16	17	16	17	16	15	18	18
TRUE CONC (C) UG/L	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00	394.00	501.00
MEAN RECOVERY (X)	400.33	512.44	378.44	443.88	391.69	511.53	393.31	504.59	400.94	486.47	379.44	473.00
ACCURACY(%REL ERROR)	1.61	2.28	-3.95	-11.40	-0.59	2.10	-0.17	0.72	1.76	-2.90	-3.69	-5.59
OVERALL STD DEV (S)	84.48	136.48	65.29	87.38	74.92	129.98	74.08	143.86	116.95	122.43	94.95	122.67
OVERALL REL STD DEV, %	21.10	26.63	17.25	19.69	19.13	25.41	18.84	28.51	29.17	25.17	25.02	25.94
SINGLE STD DEV, (SR)	55.84		40.49		48.10		46.82		30.70		40.90	
ANALYST REL DEV, %	12.23		9.85		10.65		10.43		6.92		9.60	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 74. STATISTICAL SUMMARY FOR 1,2-DICHLOROPROPANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	14	14	13	13	14	13	9	9	16	14	12	11
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	7.16	10.63	8.26	12.39	6.77	9.09	12.78	11.83	7.52	9.87	10.60	11.95
ACCURACY(%REL ERROR)	-10.46	6.26	3.24	23.95	-15.34	-9.09	59.78	18.33	-6.05	-1.30	32.48	19.49
OVERALL STD DEV (S)	3.30	4.04	2.25	3.31	2.11	3.34	10.74	9.65	4.32	3.83	5.60	7.23
OVERALL REL STD DEV, %	46.04	38.01	27.26	26.70	31.15	36.69	84.05	81.52	57.50	38.85	52.83	60.47
SINGLE STD DEV, (SR)	2.14		1.30		1.60		5.06		3.17		4.47	
ANALYST REL DEV, %	24.09		12.58		20.14		41.07		36.44		39.65	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	15	13	15	14	13	12	14	15	16	14	14
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	67.52	106.10	62.22	105.73	56.06	95.22	58.62	89.13	62.33	105.44	83.09	119.53
ACCURACY(%REL ERROR)	-15.60	6.10	-22.22	5.73	-29.93	-4.78	-26.72	-10.87	-22.08	5.44	3.87	19.53
OVERALL STD DEV (S)	17.06	31.09	11.05	27.20	11.87	13.36	26.89	39.73	14.71	41.39	33.98	48.47
OVERALL REL STD DEV, %	25.27	29.30	17.75	25.73	21.18	14.04	45.87	44.58	23.60	39.25	40.89	40.55
SINGLE STD DEV, (SR)	14.59		18.11		8.55		13.05		21.99		25.64	
ANALYST REL DEV, %	16.81		21.56		11.31		17.66		26.21		25.31	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	15	15	15	15	14	14	15	15	16	16	14	14
TRUE CONC (C) UG/L	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
MEAN RECOVERY (X)	421.00	542.80	398.73	539.67	385.14	502.07	415.33	480.87	448.81	583.19	447.07	545.36
ACCURACY(%REL ERROR)	5.25	8.78	-0.32	8.15	-3.71	0.62	3.83	-3.63	12.20	16.87	11.77	9.29
OVERALL STD DEV (S)	138.73	158.79	129.91	172.09	108.00	104.99	96.27	138.73	151.99	165.33	149.77	134.06
OVERALL REL STD DEV, %	32.95	29.25	32.58	31.89	28.04	20.91	23.18	28.85	33.86	28.35	33.50	24.58
SINGLE STD DEV, (SR)	99.06		73.52		57.03		93.19		88.03		91.99	
ANALYST REL DEV, %	20.56		15.67		12.86		20.80		17.06		18.54	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 75. STATISTICAL SUMMARY FOR *CIS*-1,3-DICHLOROPROPENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	13	14	12	10	16	14	11	10	15	12	12	12
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	3.32	5.79	3.70	4.96	4.25	5.70	3.66	6.24	4.90	5.22	4.38	8.48
ACCURACY(%REL ERROR)	-58.45	-42.11	-53.78	-50.36	-46.91	-42.96	-54.31	-37.60	-38.76	-47.79	-45.22	-15.23
OVERALL STD DEV (S)	0.85	2.41	2.31	1.10	2.65	2.66	1.78	4.06	4.02	3.25	2.46	4.78
OVERALL REL STD DEV, %	25.68	41.55	62.55	22.12	62.28	46.60	48.70	65.10	82.04	62.33	56.04	56.42
SINGLE STD DEV, (SR)	0.92		0.71		1.14		2.89		1.01		2.82	
ANALYST REL DEV, %	20.16		16.32		22.88		58.51		19.88		43.84	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	15	15	13	15	17	17	15	16	16	17	15	14
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	44.90	59.66	38.72	61.12	41.70	49.20	44.59	56.84	49.81	49.07	46.05	52.62
ACCURACY(%REL ERROR)	-43.88	-40.34	-51.60	-38.88	-47.87	-50.80	-44.26	-43.16	-37.73	-50.93	-42.43	-47.38
OVERALL STD DEV (S)	14.79	25.18	7.43	27.93	17.15	20.96	15.99	24.79	25.77	11.65	21.61	17.24
OVERALL REL STD DEV, %	32.94	42.21	19.18	45.70	41.12	42.59	35.85	43.62	51.74	23.74	46.92	32.76
SINGLE STD DEV, (SR)	5.93		9.74		14.23		10.71		13.42		7.76	
ANALYST REL DEV, %	11.34		19.51		31.30		21.13		27.14		15.73	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	15	14	15	14	15	17	16	16	15	14	14	14
TRUE CONC (C) UG/L	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00	400.00	488.00
MEAN RECOVERY (X)	240.13	274.36	270.80	279.43	206.13	336.85	268.81	320.75	177.10	231.41	197.93	251.79
ACCURACY(%REL ERROR)	-39.97	-43.78	-32.30	-42.74	-48.47	-30.97	-32.80	-34.27	-55.72	-52.58	-50.52	-48.40
OVERALL STD DEV (S)	90.65	93.68	122.49	93.90	71.58	272.56	137.93	185.13	73.92	93.64	70.48	74.03
OVERALL REL STD DEV, %	37.75	34.15	45.23	33.61	34.72	80.91	51.31	57.72	41.74	40.46	35.61	29.40
SINGLE STD DEV, (SR)	28.95		41.81		43.99		67.86		27.66		52.58	
ANALYST REL DEV, %	11.25		15.20		16.20		23.02		13.54		23.38	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 76. STATISTICAL SUMMARY FOR 1,1,2,2-TETRACHLOROETHANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	14	14	16	15	12	11	16	15	18	17
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	8.33	8.90	6.01	9.80	6.70	9.26	18.71	8.06	6.96	9.32	9.38	10.46
ACCURACY(%REL ERROR)	4.16	-11.04	-24.90	-2.01	-16.21	-7.40	133.87	-19.35	-12.97	-6.82	17.28	4.61
OVERALL STD DEV (S)	6.13	3.24	2.32	4.99	2.12	3.05	19.28	6.37	2.84	4.88	5.23	5.59
OVERALL REL STD DEV, %	73.52	36.41	38.56	50.91	31.59	32.98	103.07	78.99	40.85	52.37	55.74	53.42
SINGLE STD DEV, (SR)	3.60		2.15		1.93		11.65		2.17		3.83	
ANALYST REL DEV, %	41.82		27.25		24.21		87.06		26.70		38.56	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	18	18	16	16	18	18	16	16	18	18	19	19
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	75.57	95.89	68.26	90.37	74.18	93.89	71.91	78.09	70.42	88.54	82.09	94.16
ACCURACY(%REL ERROR)	-5.54	-4.11	-14.67	-9.63	-7.28	-6.11	-10.11	-21.91	-11.98	-11.46	2.62	-5.84
OVERALL STD DEV (S)	17.77	25.89	13.77	16.71	19.46	21.86	41.24	25.08	23.87	28.81	22.32	24.63
OVERALL REL STD DEV, %	23.51	26.99	20.17	18.49	26.24	23.29	57.35	32.12	33.90	32.54	27.19	26.15
SINGLE STD DEV, (SR)	12.56		9.18		8.67		29.92		14.21		19.66	
ANALYST REL DEV, %	14.65		11.57		10.31		39.89		17.88		22.31	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	17	18	16	15	18	18	18	17	18	18	19	19
TRUE CONC (C) UG/L	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00	400.00	499.00
MEAN RECOVERY (X)	381.41	485.44	391.19	465.53	383.61	506.50	431.67	471.12	351.72	493.28	412.11	522.84
ACCURACY(%REL ERROR)	-4.65	-2.72	-2.20	-6.71	-4.10	1.50	7.92	-5.59	-12.07	-1.15	3.03	4.78
OVERALL STD DEV (S)	94.50	124.14	101.85	86.12	107.08	141.23	193.94	156.82	95.53	133.62	134.41	160.94
OVERALL REL STD DEV, %	24.78	25.57	26.04	18.50	27.91	27.88	44.93	33.29	27.16	27.09	32.61	30.78
SINGLE STD DEV, (SR)	68.70		38.83		58.89		62.41		65.68		56.84	
ANALYST REL DEV, %	15.85		9.07		13.23		13.83		15.54		12.16	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 77. STATISTICAL SUMMARY FOR 1,3-DICHLOROBENZENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	17	16	15	14	16	15	14	14	17	15	16	15
TRUE CONC (C) UG/L	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00
MEAN RECOVERY (X)	8.99	8.33	6.78	9.55	7.96	8.63	8.95	6.92	7.56	7.20	7.41	7.00
ACCURACY(%REL ERROR)	12.37	-16.71	-15.26	-4.52	-0.47	-13.68	11.91	-30.76	-5.48	-28.03	-7.41	-30.00
OVERALL STD DEV (S)	4.98	4.24	3.13	3.70	2.61	2.62	4.94	2.51	3.94	2.24	3.32	2.62
OVERALL REL STD DEV, %	55.42	50.90	46.21	38.76	32.75	30.31	55.20	36.25	52.05	31.14	44.86	37.41
SINGLE STD DEV, (SR)	3.57		1.90		1.69		1.99		1.70		2.92	
ANALYST REL DEV, %	41.24		23.22		20.35		25.10		23.00		40.53	
MEDIUM YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	18	19	17	17	19	18	19	19	18	18	18	19
TRUE CONC (C) UG/L	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00	80.00	100.00
MEAN RECOVERY (X)	75.24	105.95	70.08	93.69	84.06	94.66	74.98	89.74	79.04	89.49	76.01	95.92
ACCURACY(%REL ERROR)	-5.94	5.95	-12.40	-6.31	5.08	-5.34	-6.27	-10.26	-1.20	-10.51	-4.99	-4.08
OVERALL STD DEV (S)	20.45	33.45	16.59	16.85	23.95	20.40	18.98	22.79	20.85	19.04	15.21	29.24
OVERALL REL STD DEV, %	27.18	31.57	23.68	17.98	28.49	21.55	25.31	25.40	26.37	21.28	20.01	30.48
SINGLE STD DEV, (SR)	13.12		13.16		13.68		18.30		14.44		14.17	
ANALYST REL DEV, %	14.48		16.07		15.31		22.22		17.14		16.49	
HIGH YOUDEN PAIR	5	6	5	6	5	6	5	6	5	6	5	6
NUMBER OF DATA POINTS	18	18	18	17	19	19	19	19	18	18	17	19
TRUE CONC (C) UG/L	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00	399.00	500.00
MEAN RECOVERY (X)	373.33	455.22	353.47	461.65	392.00	469.79	383.95	495.58	340.83	482.89	346.47	476.00
ACCURACY(%REL ERROR)	-6.43	-8.96	-11.41	-7.67	-1.75	-6.04	-3.77	-0.88	-14.58	-3.42	-13.17	-4.80
OVERALL STD DEV (S)	100.29	112.48	135.87	85.47	96.64	97.00	120.08	158.97	64.76	82.14	88.15	100.06
OVERALL REL STD DEV, %	26.86	24.71	38.44	18.51	24.65	20.65	31.27	32.08	19.00	17.01	25.44	21.02
SINGLE STD DEV, (SR)	69.86		63.28		65.51		85.45		53.05		51.76	
ANALYST REL DEV, %	16.86		15.53		15.20		19.43		12.88		12.59	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

APPENDIX E

EFFECTS OF WATER TYPE ON PRECISION AND ACCURACY

TABLE 78. EFFECT OF WATER TYPE ON TRICHLOROFLUOROMETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .99915

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2449	.0457
3	-.0630	.0252
4	-.0346	.0195
5	-.1917	.0423
6	-.2137	.0511

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1728.09191	1728.09191		
REG(WATER/DISTILLED)	10	1.30668	.13067	1.14	.3321
ERROR	601	69.09710	.11497		
TOTAL	612	1798.49569			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.2449	(-.5987 , .1089)	.0457	(-.0355 , .1269)
3	-.0630	(-.4181 , .2922)	.0252	(-.0562 , .1066)
4	-.0346	(-.3858 , .3167)	.0195	(-.0612 , .1002)
5	-.1917	(-.5514 , .1681)	.0423	(-.0403 , .1249)
6	-.2137	(-.5707 , .1433)	.0511	(-.0305 , .1328)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 79. EFFECT OF WATER TYPE ON CHLOROMETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.02998

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0027	.0324
3	-.0517	.0553
4	-.0832	.0584
5	.0279	-.0089
6	.5076	-.0672

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1593.20511	1593.20511		
REG(WATER/DISTILLED)	10	7.17013	.71701	1.55	.1175
ERROR	561	259.16800	.46198		
TOTAL	572	1859.54325			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0027	(-.7475 , .7420)	.0324	(-.1375 , .2024)
3	-.0517	(-.7970 , .6936)	.0553	(-.1147 , .2254)
4	-.0832	(-.8218 , .6554)	.0584	(-.1100 , .2268)
5	.0279	(-.7164 , .7721)	-.0089	(-.1787 , .1608)
6	.5076	(-.2680 , 1.2833)	-.0672	(-.2435 , .1091)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 80. EFFECT OF WATER TYPE ON VINYL CHLORIDE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.02245

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.1717	.0384
3	-.0825	.0289
4	-.2232	.0658
5	-.2624	.0576
6	.0369	.0129

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1697.79002	1697.79002		
REG(WATER/DISTILLED)	10	1.75323	.17532	1.81	.0567
ERROR	560	54.36370	.09708		
TOTAL	571	1753.90695			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.1717	(-.5119 , .1686)	.0384	(-.0403 , .1171)
3	-.0825	(-.4196 , .2546)	.0289	(-.0488 , .1066)
4	-.2232	(-.5656 , .1192)	.0658	(-.0131 , .1447)
5	-.2624	(-.5995 , .0747)	.0576	(-.0200 , .1353)
6	.0369	(-.3042 , .3779)	.0129	(-.0657 , .0916)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 81. EFFECT OF WATER TYPE ON *TRANS*-1,2-DICHLOROETHENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.00323

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2593	.0454
3	-.0669	.0231
4	-.1852	.0384
5	-.0142	.0107
6	-.1057	.0270

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1856.56630	1856.56630		
REG(WATER/DISTILLED)	10	1.25158	.12516	1.06	.3899
ERROR	643	75.80354	.11789		
TOTAL	654	1933.62142			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.2593	(-.6094 , .0908)	.0454	(-.0343 , .1251)
3	-.0669	(-.4068 , .2729)	.0231	(-.0547 , .1010)
4	-.1852	(-.5283 , .1578)	.0384	(-.0402 , .1171)
5	-.0142	(-.3583 , .3299)	.0107	(-.0685 , .0899)
6	-.1057	(-.4538 , .2424)	.0270	(-.0524 , .1064)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 82. EFFECT OF WATER TYPE ON 1,1,1-TRICHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .98541

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1249	-.0336
3	.0946	-.0120
4	-.1928	.0390
5	.0435	-.0060
6	.2091	-.0145

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1585.93530	1585.93530		
REG(WATER/DISTILLED)	10	3.09921	.30992	2.51	.0058
ERROR	603	74.43980	.12345		
TOTAL	614	1663.47432			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1249	(-.2492 , .4990)	-.0336	(-.1184 , .0512)
3	.0946	(-.2789 , .4682)	-.0120	(-.0975 , .0735)
4	-.1928	(-.5666 , .1810)	.0390	(-.0458 , .1237)
5	.0435	(-.3285 , .4155)	-.0060	(-.0907 , .0787)
6	.2091	(-.1651 , .5834)	-.0145	(-.0993 , .0703)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 83. EFFECT OF WATER TYPE ON TRICHLOROETHENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .96123

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0538	.0153
3	-.1879	.0483
4	-.2025	.0470
5	-.0968	.0380
6	.0768	-.0020

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1496.26068	1496.26068		
REG(WATER/DISTILLED)	10	1.16763	.11676	.96	.4745
ERROR	564	68.36207	.12121		
TOTAL	575	1565.79039			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0538	(-.4466 , .3389)	.0153	(-.0700 , .1006)
3	-.1879	(-.5805 , .2046)	.0483	(-.0372 , .1338)
4	-.2025	(-.5994 , .1943)	.0470	(-.0400 , .1341)
5	-.0968	(-.5005 , .3069)	.0380	(-.0497 , .1258)
6	.0768	(-.3274 , .4809)	-.0020	(-.0901 , .0860)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 84. EFFECT OF WATER TYPE ON DIBROMOCHLOROMETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .94567

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1096	-.0133
3	-.2468	.0423
4	-.2439	.0483
5	-.0931	.0184
6	.2142	-.0336

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1353.62416	1353.62416		
REG(WATER/DISTILLED)	10	2.59815	.25981	1.56	.1151
ERROR	553	92.11652	.16658		
TOTAL	564	1448.33883			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1096	(-.3643 , .5835)	-.0133	(-.1163 , .0897)
3	-.2468	(-.7213 , .2277)	.0423	(-.0610 , .1457)
4	-.2439	(-.7185 , .2307)	.0483	(-.0562 , .1529)
5	-.0931	(-.5601 , .3739)	.0184	(-.0834 , .1201)
6	.2142	(-.2538 , .6821)	-.0336	(-.1357 , .0686)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 85. EFFECT OF WATER TYPE ON TETRACHLOROETHENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.00553

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1830	-.0330
3	.0142	.0019
4	-.3278	.0342
5	.0844	-.0141
6	.2854	-.0460

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1572.52747	1572.52747		
REG(WATER/DISTILLED)	10	4.34955	.43496	3.43	.0002
ERROR	608	77.11310	.12683		
TOTAL	619	1653.99012			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1830	(-.2055 , .5715)	-.0330	(-.1170 , .0510)
3	.0142	(-.3661 , .3946)	.0019	(-.0806 , .0844)
4	-.3278	(-.7713 , .1156)	.0342	(-.0591 , .1275)
5	.0844	(-.2991 , .4678)	-.0141	(-.0973 , .0691)
6	.2854	(-.1050 , .6758)	-.0460	(-.1312 , .0391)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 86. EFFECT OF WATER TYPE ON 1,2-DICHLOROBENZENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.01671

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1436	-.0269
3	.0385	-.0186
4	-.4149	.0648
5	-.1077	.0156
6	-.2067	.0360

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1382.06309	1382.06309		
REG(WATER/DISTILLED)	10	2.65798	.26580	1.88	.0461
ERROR	513	72.69084	.14170		
TOTAL	524	1457.41191			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1436	(-.3028 , .5900)	-.0269	(-.1237 , .0700)
3	.0385	(-.4156 , .4927)	-.0186	(-.1168 , .0796)
4	-.4149	(-.8690 , .0392)	.0648	(-.0333 , .1630)
5	-.1077	(-.5604 , .3450)	.0156	(-.0820 , .1131)
6	-.2067	(-.6700 , .2566)	.0360	(-.0641 , .1361)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 87. EFFECT OF WATER TYPE ON BROMOMETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.14667

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0117	.0365
3	-.1142	.0528
4	.2371	-.0356
5	.1830	-.0095
6	.3129	-.0546

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1933.28671	1933.28671		
REG(WATER/DISTILLED)	10	3.40849	.34085	.88	.5493
ERROR	540	208.53868	.38618		
TOTAL	551	2145.23388			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0117	(-.7146 , .6913)	.0365	(-.1166 , .1897)
3	-.1142	(-.8088 , .5804)	.0528	(-.0994 , .2049)
4	.2371	(-.4662 , .9404)	-.0356	(-.1911 , .1200)
5	.1830	(-.5443 , .9103)	-.0095	(-.1693 , .1504)
6	.3129	(-.4273 , 1.0530)	-.0546	(-.2172 , .1080)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 88. EFFECT OF WATER TYPE ON CHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.06383

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0295	.0044
3	.1070	-.0048
4	.1668	-.0271
5	-.0432	.0178
6	.0293	.0043

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1633.65009	1633.65009		
REG(WATER/DISTILLED)	10	.65447	.06545	.93	.5064
ERROR	529	37.29273	.07050		
TOTAL	540	1671.59729			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.0295	(-.2708 , .3298)	.0044	(-.0641 , .0730)
3	.1070	(-.1833 , .3973)	-.0048	(-.0710 , .0614)
4	.1668	(-.1341 , .4678)	-.0271	(-.0962 , .0420)
5	-.0432	(-.3400 , .2535)	.0178	(-.0503 , .0859)
6	.0293	(-.2629 , .3216)	.0043	(-.0623 , .0709)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 89. EFFECT OF WATER TYPE ON 1,1-DICHLOROETHENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .99100

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0115	.0074
3	.0381	-.0006
4	.0987	-.0292
5	-.1316	.0375
6	-.0048	.0141

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1558.48244	1558.48244		
REG(WATER/DISTILLED)	10	.89287	.08929	.65	.7687
ERROR	573	78.41573	.13685		
TOTAL	584	1637.79104			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0115	(-.3919 , .3688)	.0074	(-.0799 , .0946)
3	.0381	(-.3417 , .4180)	-.0006	(-.0876 , .0865)
4	.0987	(-.2867 , .4842)	-.0292	(-.1182 , .0598)
5	-.1316	(-.5153 , .2521)	.0375	(-.0505 , .1256)
6	-.0048	(-.4125 , .4028)	.0141	(-.0800 , .1082)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 90. EFFECT OF WATER TYPE ON CHLOROFORM ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .99445

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1720	-.0237
3	.1064	-.0145
4	.0243	-.0075
5	-.0297	.0103
6	-.1448	.0326

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1655.54096	1655.54096		
REG(WATER/DISTILLED)	10	1.08846	.10885	1.24	.2631
ERROR	627	55.12709	.08792		
TOTAL	638	1711.75651			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1720	(-.1333 , .4773)	-.0237	(-.0940 , .0466)
3	.1064	(-.1884 , .4013)	-.0145	(-.0822 , .0531)
4	.0243	(-.2725 , .3212)	-.0075	(-.0754 , .0605)
5	-.0297	(-.3213 , .2619)	.0103	(-.0567 , .0773)
6	-.1448	(-.4684 , .1788)	.0326	(-.0407 , .1059)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 91. EFFECT OF WATER TYPE ON CARBON TETRACHLORIDE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.02878

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2940	.0610
3	.1178	-.0196
4	-.3602	.0585
5	-.0605	.0116
6	-.2611	.0578

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1842.98572	1842.98572		
REG(WATER/DISTILLED)	10	3.09999	.31000	3.25	.0004
ERROR	614	58.49217	.09526		
TOTAL	625	1904.57789			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.2940	(-.6060 , .0181)	.0610	(-.0106 , .1327)
3	.1178	(-.2068 , .4425)	-.0196	(-.0934 , .0542)
4	-.3602	(-.6825 , -.0378)	.0585	(-.0149 , .1320)
5	-.0605	(-.3776 , .2565)	.0116	(-.0611 , .0842)
6	-.2611	(-.5803 , .0581)	.0578	(-.0154 , .1310)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 92. EFFECT OF WATER TYPE ON *TRANS*-1,3-DICHLOROPROPENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.01654

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0032	-.0003
3	.3014	-.0473
4	-.6017	.0451
5	.0520	.0127
6	.1252	-.0293

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1366.37811	1366.37811		
REG(WATER/DISTILLED)	10	12.38472	1.23847	3.16	.0006
ERROR	518	202.96658	.39183		
TOTAL	529	1581.72942			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0032	(-.7245 , .7181)	-.0003	(-.1586 , .1580)
3	.3014	(-.4136 , 1.0164)	-.0473	(-.2040 , .1093)
4	-.6017	(-1.5334 , .3301)	.0451	(-.1445 , .2347)
5	.0520	(-.6728 , .7767)	.0127	(-.1462 , .1716)
6	.1252	(-.6306 , .8810)	-.0293	(-.1921 , .1335)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 93. EFFECT OF WATER TYPE ON 1,1,2-TRICHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.02381

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.2885	-.0529
3	.1770	-.0334
4	-.0975	.0055
5	.0432	-.0010
6	.0605	.0015

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1587.45499	1587.45499		
REG(WATER/DISTILLED)	10	2.06790	.20679	2.13	.0206
ERROR	569	55.18654	.09699		
TOTAL	580	1644.70943			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.2885	(-.0799 , .6569)	-.0529	(-.1344 , .0286)
3	.1770	(-.1722 , .5262)	-.0334	(-.1102 , .0434)
4	-.0975	(-.4509 , .2559)	.0055	(-.0721 , .0831)
5	.0432	(-.3102 , .3967)	-.0010	(-.0786 , .0766)
6	.0605	(-.2862 , .4073)	.0015	(-.0746 , .0776)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 94. EFFECT OF WATER TYPE ON BROMOFORM ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.14568

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.4471	-.0758
3	.4036	-.0604
4	.4803	-.0927
5	.2161	-.0352
6	.4567	-.0726

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1846.03473	1846.03473		
REG(WATER/DISTILLED)	10	3.10025	.31003	1.69	.0795
ERROR	591	108.41551	.18344		
TOTAL	602	1957.55049			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.4471	(-.0459 , .9402)	-.0758	(-.1834 , .0319)
3	.4036	(-.0684 , .8756)	-.0604	(-.1640 , .0433)
4	.4803	(-.0174 , .9781)	-.0927	(-.2013 , .0159)
5	.2161	(-.2549 , .6872)	-.0352	(-.1384 , .0679)
6	.4567	(-.0183 , .9317)	-.0726	(-.1768 , .0316)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 95. EFFECT OF WATER TYPE ON CHLOROBENZENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.06035

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0538	.0055
3	.2068	-.0448
4	3.9829	-.7606
5	-.0835	.0012
6	.3554	-.0632

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1342.28081	1342.28081		
REG(WATER/DISTILLED)	10	89.45342	8.94534	42.19	.0000
ERROR	532	112.80067	.21203		
TOTAL	543	1544.53490			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0538	(-.5630 , .4554)	.0055	(-.1057 , .1167)
3	.2068	(-.3041 , .7178)	-.0448	(-.1563 , .0667)
4	3.9829	(3.3520 , 4.6137)	-.7606	(-.8925 , -.6286)
5	-.0835	(-.6120 , .4449)	.0012	(-.1140 , .1164)
6	.3554	(-.2027 , .9135)	-.0632	(-.1817 , .0553)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 96. EFFECT OF WATER TYPE ON 1,4-DICHLOROBENZENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .92167

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0380	.0131
3	.0300	.0144
4	.0452	-.0084
5	-.1361	.0251
6	-.3586	.0939

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1369.38906	1369.38906		
REG(WATER/DISTILLED)	10	2.69944	.26994	2.02	.0290
ERROR	595	79.41649	.13347		
TOTAL	606	1451.50499			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0380	(-.4527 , .3768)	.0131	(-.0770 , .1033)
3	.0300	(-.3840 , .4441)	.0144	(-.0751 , .1039)
4	.0452	(-.3695 , .4599)	-.0084	(-.0984 , .0816)
5	-.1361	(-.5470 , .2748)	.0251	(-.0643 , .1145)
6	-.3586	(-.7687 , .0516)	.0939	(.0050 , .1829)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 97. EFFECT OF WATER TYPE ON METHYLENE CHLORIDE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.05426

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2520	.0522
3	-.1809	.0497
4	-.0200	.0141
5	.2355	-.0384
6	.1601	-.0244

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1733.23569	1733.23569		
REG(WATER/DISTILLED)	10	2.83985	.28398	2.20	.0163
ERROR	585	75.37595	.12885		
TOTAL	596	1811.45149			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.2520	(-.6378 , .1338)	.0522	(-.0355 , .1399)
3	-.1809	(-.5792 , .2175)	.0497	(-.0418 , .1411)
4	-.0200	(-.4072 , .3672)	.0141	(-.0743 , .1025)
5	.2355	(-.1481 , .6191)	-.0384	(-.1265 , .0497)
6	.1601	(-.2255 , .5457)	-.0244	(-.1124 , .0635)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 98. EFFECT OF WATER TYPE ON 1,1-DICHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.05272

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2240	.0349
3	-.0738	.0155
4	.0118	-.0011
5	.1334	-.0247
6	.1517	-.0284

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1813.70310	1813.70310		
REG(WATER/DISTILLED)	10	1.76091	.17609	2.28	.0125
ERROR	616	47.52303	.07715		
TOTAL	627	1862.98703			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.2240	(-.5122 , .0643)	.0349	(-.0314 , .1012)
3	-.0738	(-.3555 , .2080)	.0155	(-.0494 , .0805)
4	.0118	(-.2786 , .3021)	-.0011	(-.0676 , .0655)
5	.1334	(-.1578 , .4246)	-.0247	(-.0914 , .0421)
6	.1517	(-.1361 , .4395)	-.0284	(-.0947 , .0379)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 99. EFFECT OF WATER TYPE ON 1,2-DICHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.01408

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0407	.0035
3	-.2102	.0327
4	.4150	-.1046
5	.0564	-.0306
6	1.9431	-.4340

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1331.91142	1331.91142		
REG(WATER/DISTILLED)	10	31.30708	3.13071	9.55	.0000
ERROR	542	177.65199	.32777		
TOTAL	553	1540.87049			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0407	(-.6664 , .5850)	.0035	(-.1398 , .1467)
3	-.2102	(-.8150 , .3945)	.0327	(-.1068 , .1721)
4	.4150	(-.2293 , 1.0594)	-.1046	(-.2502 , .0409)
5	.0564	(-.5650 , .6778)	-.0306	(-.1733 , .1120)
6	1.9431	(1.2138 , 2.6724)	-.4340	(-.5903 , -.2778)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 100. EFFECT OF WATER TYPE ON BROMODICHLOROMETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.00317

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1246	-.0283
3	-.1201	.0209
4	-.0093	-.0006
5	.0027	-.0098
6	.0659	-.0213

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1497.49639	1497.49639		
REG(WATER/DISTILLED)	10	.54275	.05427	.49	.8956
ERROR	565	62.32876	.11032		
TOTAL	576	1560.36789			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.1246	(-.2499 , .4991)	-.0283	(-.1130 , .0564)
3	-.1201	(-.4821 , .2418)	.0209	(-.0616 , .1033)
4	-.0093	(-.3683 , .3496)	-.0006	(-.0826 , .0815)
5	.0027	(-.3648 , .3702)	-.0098	(-.0936 , .0740)
6	.0659	(-.2923 , .4242)	-.0213	(-.1026 , .0599)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 101. EFFECT OF WATER TYPE ON 1,2-DICHLOROPROPANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.03911

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.3328	-.0667
3	.0305	.0012
4	.0279	-.0130
5	-.1719	.0421
6	.0776	-.0095

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1339.85997	1339.85997		
REG(WATER/DISTILLED)	10	1.67214	.16721	.85	.5846
ERROR	472	93.31996	.19771		
TOTAL	483	1434.85207			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.3328	(-.2190 , .8846)	-.0667	(-.1861 , .0527)
3	.0305	(-.5183 , .5794)	.0012	(-.1183 , .1207)
4	.0279	(-.5766 , .6324)	-.0130	(-.1399 , .1138)
5	-.1719	(-.7059 , .3620)	.0421	(-.0740 , .1581)
6	.0776	(-.4916 , .6469)	-.0095	(-.1320 , .1130)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 102. EFFECT OF WATER TYPE ON *CIS*-1,3-DICHLOROPROPENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.04151

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.2285	.0472
3	.1267	-.0365
4	-.1608	.0265
5	.1602	-.0573
6	.3193	-.0715

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1294.31341	1294.31341		
REG(WATER/DISTILLED)	10	2.71965	.27197	1.77	.0626
ERROR	486	74.48584	.15326		
TOTAL	497	1371.51890			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.2285	(-.7379 , .2809)	.0472	(-.0622 , .1566)
3	.1267	(-.3485 , .6018)	-.0365	(-.1400 , .0669)
4	-.1608	(-.6749 , .3533)	.0265	(-.0827 , .1358)
5	.1602	(-.3266 , .6469)	-.0573	(-.1635 , .0490)
6	.3193	(-.1851 , .8238)	-.0715	(-.1805 , .0375)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 103. EFFECT OF WATER TYPE ON 1,1,2,2-TETRACHLOROETHANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.03221

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.1630	.0249
3	-.0028	.0013
4	.0633	-.0266
5	-.0426	-.0044
6	.1653	-.0242

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1548.39889	1548.39889		
REG(WATER/DISTILLED)	10	1.62606	.16261	.99	.4477
ERROR	570	93.29452	.16367		
TOTAL	581	1643.31947			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.1630	(-.6426 , .3167)	.0249	(-.0789 , .1287)
3	-.0028	(-.4683 , .4627)	.0013	(-.0992 , .1018)
4	.0633	(-.4364 , .5631)	-.0266	(-.1323 , .0791)
5	-.0426	(-.5081 , .4229)	-.0044	(-.1049 , .0961)
6	.1653	(-.2886 , .6192)	-.0242	(-.1225 , .0740)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

TABLE 104. EFFECT OF WATER TYPE ON 1,3-DICHLOROBENZENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.01538

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0797	.0077
3	.0323	-.0003
4	-.1404	.0238
5	-.1867	.0302
6	-.2133	.0344

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	1596.89114	1596.89114		
REG(WATER/DISTILLED)	10	1.00089	.10009	.96	.4777
ERROR	592	61.74074	.10429		
TOTAL	603	1659.63277			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0797	(-.4524 , .2930)	.0077	(-.0727 , .0881)
3	.0323	(-.3336 , .3982)	-.0003	(-.0792 , .0786)
4	-.1404	(-.5143 , .2336)	.0238	(-.0563 , .1039)
5	-.1867	(-.5510 , .1777)	.0302	(-.0488 , .1093)
6	-.2133	(-.5799 , .1534)	.0344	(-.0449 , .1137)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.